The RUBBER AGE

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LATE NEWS of the Industry

Thermoid Company Planning to Purchase The Woven Steel Hose & Rubber Company

THE first step in a program of expansion planned by the Thermoid Company is revealed in a letter sent to stockholders by R. J. Stokes, president. Negotiations are now being concluded, Mr. Stokes indicated, for the acquisition of the Woven Steel Hose & Rubber Company of Trenton, N. J. Final details will be announced shortly.

"This acquisition," said Mr. Stokes, "involves only a small amount of cash, with part payment to be made in common stock of the Thermoid Company. If we figure our Thermoid common stock at $15 per share, the purchase price of the Woven Steel Hose & Rubber properties would still be substantially below the asset value of that company.

"The acquisition of the Woven Steel Hose & Rubber Company appears highly desirable, as it will round out the line of mechanical rubber goods of the Thermoid Company. Moreover, it should not only provide us with an increased volume of business on a profitable basis, but prevent loss in sales of various other products where customers do not care to split their orders."

While manufacturing various mechanical rubber goods and automobile brake lining, the Woven Steel Hose & Rubber Company has specialized in long length molded hose on reels of approximately 500 feet for air and water, armored or plain locomotive squirt hose complete with fittings, and similar lines of hose items. The officers of the company include Horace B. Tobin, president and treasurer; Ralph W. Tobin, vice-president; and Henry B. Skellenger, secretary.

A recently issued report of the Thermoid Company and wholly owned subsidiaries for the quarter ended September 30, 1930, shows net profit of $62,699, after depreciation, interest and federal taxes, equivalent after dividend requirements on the 7 per cent preferred stock, to 3 cents a share on 256,026 no-par shares of common stock. For the nine months ended September 30, net profit was $325,993, equal to 80 cents a common share.

Mr. Stokes, in connection with the report, states: "The company in the first six months of the year earned an amount in excess of full preferred dividend requirements for the entire year. In view of the reduced volume of business, the management considers this showing highly satisfactory.

"The Southern Asbestos Company, Thermoid subsidiary, is now operating on a profitable basis. Third quarter earnings, not finally verified, will add a small amount to the Thermoid figures."

The Thermoid Company did not issue quarterly reports during 1929, and direct comparisons of results are, therefore, not possible. For the full year, the company earned $3.31 a common share.

Thermoid Company directors in July, due to the lower earnings, voted to omit the common dividend of which two quarterly payments of 50 cents each had been made earlier in the year. Since the common stock of the Thermoid Company was listed on the New York Stock Exchange four months ago, it has declined from 26⅞ to 3⅞ and is currently selling at about 6. Last year the common sold on the New York Curb Exchange as high as 38, while the 7 per cent preferred touched a high of 112⅜. This year the preferred has dropped from 87 to 60 and is now selling a little above the latter figure.

Tire Manufacturers and Dealers Agree Upon Uniform Discounts and Datings

UNIFORM discounts and datings on tire deliveries to dealers were agreed upon at a conference between representatives of the larger tire manufacturers and officers of the National Tire Dealers Association, according to trade reports following a conference at the Portage Country Club, Akron, O., on November 11. The meeting at Akron, coming directly after the National Tire Dealers Association annual sessions at Chicago, is generally admitted to have laid the groundwork for closer co-operation between the independent dealers and the manufacturers.

This action will insure equal treatment of all dealers in the matter of tire deliveries, especially during the spring dating period which is now getting under way. Manufacturers anticipate a heavy tire demand for replacement during 1931, according to opinions expressed during the conference.

The meeting between the rubber company executives and dealers will probably be followed by others in an effort to bring about still closer co-operation between the manufacturing and distributing branches of the trade. Informal discussions were also held on the establishment by some companies of their own retail dealer units. Independent

dealers insist that these shall be regulated so as not to work a hardship upon them.

The committee representing the dealers' association at the Akron meeting was composed of M. J. Barry of Baltimore, president; H. B. Smith, of Fort Smith, Ark., retiring president; and Joseph H. Walsh, of Jacksonville, Fla., a director. Included among the manufacturers' representatives were A. L. Viles, general manager of the Rubber Manufacturers Association; R. S. Wilson, vice-president and sales manager of the Goodyear Tire & Rubber Company; J. J. Jordan, vice-president and sales manager of the Kelly-Springfield Tire Company; L. R. Jackson, sales manager of the Firestone Tire & Rubber Company; Robert McTammany, sales manager of the B. F. Goodrich Company; and C. T. Burke, of the General Tire & Rubber Company.

Battery Manufacturers' Assn. Discusses Trend in the Production of Batteries

THE sixth annual convention of the National Battery Manufacturers Association was held at the Hotel Hollenden, Cleveland, O., on November 7 and 8. Discussions of current tendencies of battery manufacture were the outstanding features of the sessions, particularly a paper presented by John A. Smith, of the Hood Rubber Company, Watertown, Mass., on the subject of "Battery Containers."

Extremely important to the battery industry has been the development of containers. Mr. Smith in his paper pointed out that the one-piece hard rubber container was introduced about ten years ago as an improvement over the old wooden case. Then came the composition container which, since 1923, has represented a growing proportion of all containers.

We have now, Mr. Smith humorously explained, three generations of battery containers, the grandfather wooden box, the father, or second generation, represented by the hard rubber case, and finally the son, or third generation, of the composition container.

Today, he said, hard rubber containers are selling at approximately 70 per cent of the 1926 price, while the present price of the composition box is about 50 per cent. of what it was in 1926.

Mr. Smith sees a place for both the hard rubber and the composition container, but the size of the market for each, he says, depends upon the trend of costs and competition. Composition containers in recent years have been so much improved, he believes, as to eliminate many prevous objections. Acid absorption has been greatly reduced, tensile strength of the composition increased, and the finish and appearance of the composition boxes greatly enhanced.

Composition containers, he declared, do not lend themselves to rebuilding, which might be a point in their favor. The composition box has demonstrated, adds Mr. Smith, that it is peculiarly adapted to meet conditions of low cost and competitive selling, such as the industry is now facing. Continuing research, moreover, is bringing about better quality and improved appearance.

"Uniformity of product, close supervision of manufacturing and continuous reasearch by reliable manufacturers of composition boxes become absolutely essential," said Mr. Smith.

Hard rubber containers, the speaker said, are likely to hold their present position in the industry if manufacturers do not sacrifice quality and if they realize that they cannot compete in price with the composition container.

Mr. Smith, in concluding his address, suggested the consideration of the association be directed to standardizing types of battery handles and varous types of ribbed or "T" containers. Now in general use are three types of handles, the finger hold ledge type and semi-ledge. He thought that the ledge type might eventually rule.

Other important papers presented included an analysis of "Battery Manufacture as Influenced by Present Economic Conditions" by O. W. A. Oetting, of the Globe-Union Manufacturing Company, and a treatment of "Lead Oxides and Storage Battery Lead Oxides" by W. H. Rowley, vice-president of the Evans-Wallower Lead Company. A. A. MacLean, of the USL Battery Corporation, was elected president of the association, succeeding Ward S. Perry, of the Vesta Battery Corporation.

Alexander Hamilton Institute Figures 1931 Tire Output at 72,600,000 Units

PRODUCTION of automobile tires in 1931 is estimated at 72,600,000 by the Alexander Hamilton Institute, comparing, according to the organization's own figures, to an estimated 56,000,000 in 1930 and 74,600,000 in 1929. The latest official estimate of 1929 production by the Rubber Manufacturers Association, based on the census of manufactures last year, is 69,237,520 tires, while 1930 production on the same basis seems unlikely to reach 53,000,000.

Three factors enter into the 1931 estimate of the Alexander Hamilton Institute: New cars, exports and replacements. On the basis of an expected 4,500,000 new cars in 1931, as compared with an estimated 3,500,000 cars in 1930, tire requirements for new cars, on the basis of five tires per car, should total 22,500,000. Exports, with a 5 per cent increase, would total 2,500,000.

The big increase is to be expected in replacements, said the institute. During 1929 there were about 21,900,000 old cars in use so that replacements averaged somewhat more than two tires per car. This year there have been 23,400,000 old cars in use, which means that average replacements will have amounted to little more than one and one-half tires per car.

While some reduction in replacements per car is logical, due to improvement in tires, this factor is not sufficient to explain such a sharp drop as that which has occurred in replacements this year. It is apparent that many persons have postponed replacing their old tires because of the business depression. This argues for an active replacement demand in 1931, says the institute's bulletin.

The prospect is that 23,800,000 old cars will be in use in 1931, which should provide a replacement market for at least 47,600,000 tires, allowing two tires per car as an average replacement, a figure which will probably prove low in view of the economizing which has occurred this year.

Chicago Rubber Group Will Discuss Sponge Rubber and Tubing Machinery

THE Chicago Rubber Group of the American Chemical Society will hold the second meeting of its 1930-1931 season on December 5th, in the Rubber Group Dining Room of the Auditorium Hotel, Chicago, Ill. The program for this evening will be presented by two well-known men on the subject of "Sponge Rubber" and "Tubing Machinery and its application in the Rubber Industry."

A recent survey was made of the subjects that might be of interest to the members of the Chicago Group, and a majority of members desired these two subjects for the December meeting.

Because of the large number of men who expect to be

present, and in order that adequate facilities may be properly arranged for, the program committee urges that those who expect to be present send in their reservation to the secretary, B. W. Lewis, c/o Wishnick-Tumpeer, Inc., 365 East Illinois St., Chicago.

It is expected that those attending this meeting will be well rewarded for their time spent. On notices being sent to the members of the Group, a week before the meeting, complete details of the program for the evening will be announced.

United States Rubber Consumption Totaled 27,271 Tons During October

CONSUMPTION of crude rubber by manufacturers in the United States for the month of October amounted to 27,271 long tons, an increase over September of 8 per cent. In previous years there has been virtually no change in the consumption for October as compared with September. For the first ten months of 1930, domestic consumption has been 326,081 long tons, according to the quarterly and monthly reports of the Rubber Manufacturers' Association.

Imports of crude rubber amounted to 43,729 long tons as compared with 39,467 long tons for September and 43,725 long tons for October a year ago, according to the association's own figures.

Stocks on hand continue to increase and at the end of October were placed at 184,701 long tons, an increase of 9 per cent over September 30th, and compare with 88,483 long tons a year ago.

Crude rubber afloat for United States ports on October 31st amounted to 51,122 long tons.

September Tire Output Below Shipments; Inventories Are Lowest in Two Years

INVENTORIES of pneumatic casings on hand continue their downward trend, according to statistics issued by the Rubber Manufacturers Association, and were on September 30 lower than at any time since September 30, 1928. Based on figures revised according to the 1929 Census of Manufacturers, this organization reports 9,811,764 casings on hand September 30, a decrease of 10.6 per cent under the August 31 total of 10,847,705 casings.

Production of pneumatic casings for the month of September is placed at 3,365,444, a decrease of 24 per cent under the August figure of 4,165,611. Production for September a year ago amounted to 4,460,250 casings.

Shipments of pneumatic casings for the first nine months of this year exceeded production by 4.8 per cent, as compared with a 1 per cent excess of shipments over production during the same period of 1929. Shipments of pneumatic casings for the month of September amounted to 4,405,176 as compared with 5,174,875 casings in August, 1930, and 5,623,465 a year ago.

September inner tube production was also under shipments for the month, keeping inventories down to the lowest point since November, 1925. During the month, there were 3,816,780 inner tubes produced, and 4,540,572 tubes shipped, leaving a stock in manufacturers' hands of 10,065,151 tubes. Similar trends were apparent in solid and cushion tires, shipments exceeding output and inventories dropping to the lowest level in years.

The tire industry is estimated to have consumed 41,727,539 pounds of crude rubber and 13,645,655 pounds of cotton fabric during the month of September in the manufacture of all types of pneumatic casings, tubes and solid and cushion tires.

N. Y. RUBBER GROUP WILL OFFER NOVEL MEETING ON DEC. 10

A DISTINCTLY new departure in style of program will feature the next meeting of the New York Group of the Rubber Division, American Chemical Society, which will be held on the Park Central Hotel Roof, Seventh Avenue and 56th Street, New York City, on December 10 at 6 P. M. No meeting held by the Rubber Division in the past has promised so much as this occasion in combining novelty and diversity of entertainment with the seriousness of purpose which always pervades such gatherings.

The program, as outlined, calls for a combination of technical session and entertainment features. A record attendance is expected. The subjects of the technical papers which will be read have not yet been determined, but a feature of the evening will be a motion picture showing all phases of the manufacture of carbon black, presented through the courtesy of the Binney & Smith Company. The film, which has not been shown before, depicts the actual operations in carbon black production, with airplane "shots" of the fields, wells coming in, and many other interesting sidelights on the industry.

Music will be rendered by the Park Central Hotel Orchestra during the dinner and throughout the evening. Souvenirs will be at each plate.

Fun and merriment will be dispersed throughout the program in the form of balloon blowing contests and various lottery and grab bag events. Each ticket of admission will carry a detachable stub bearing a number. Corresponding numbers will be drawn in the lottery and the lucky ones will receive awards. About 25 prizes, all contributed by member firms of the group, will be presented.

The tickets are $2.50 per plate and reservations should be made early through K. J. Soule, secretary-treasurer of the group, in care of the Manhattan Rubber Manufacturing Division, Raybestos-Manhattan, Inc., Passaic, N. J.

The association's estimates are based on reports furnished by manufacturers who produce approximately 80 per cent of the total for the United States, but have been adjusted to represent 100 per cent in the above figures. Previously, the association estimated the completeness of its reports at 75 per cent of the total industry, but revisions on the basis of the 1929 Census of Manufactures have caused the association to raise its estimate of their completeness to 80 per cent.

Original Equipment Tire Prices Cut

Principal tire manufacturers share in the price reductions on original equipment to automobile manufacturers which will go into effect on December 1. The decreases in price schedules are understood to range from 5 to 10 per cent on all grades of tires shipped to manufacturing plants for original equipment. The current schedules have been in effect with practically no change since December 1, 1929, and the reductions now being made reflect the lower prices for rubber, cotton and other materials employed in the manufacture of tires.

BUY NOW—Crude rubber will never again go to present levels.

(Other news of the industry will be found on pages 201-207)

"Architectural Rubber"

ROYALITE is the name given to the new product of the United States Rubber Company which has been developed for use as a covering for floors and walls and as an interior trim. While Royalite will be used extensively as a flooring material, its usefulness is much broader, in that it can be used on walls as effectively as on floors.

One term used in describing Royalite is "architectural rubber." Up to the present time, the use of rubber in architecture has been limited largely to floors, and the colors and textures that have been available generally have been imitations of wood, marble or other stone. Royalite is said to have a character of its own. It is not an imitation of any known material. It is rubber. The colors and textures are new and were developed in the "U. S." Laboratories in collaboration with Ben Nash, well-knowed colorist.

Royalite, as it appears in the new line, is a convincing demonstration that rubber, without imitating anything, has possibilities of beauty which need only the touch of the artist and the master craftsman to bring them into being. The line opens a field of usefulness which was never open to rubber flooring of the ordinary type.

A series of advance showings of Royalite, in which its applications will be demonstrated, are to be held throughout the principal cities of the country during November and December. The final showing in New York City was at the Hotel Roosevelt, November 12, 13 and 14.

BUY NOW—Some of your molds are old. Replace them now before business picks up. Save any interruption in your future production schedule by making the change now.

Rubber Cultivation Gains in India

THAT the production of crude rubber and the area under plantation cultivation in Southern India and Burma is increasing in important proportions, is impressively told in the latest figures published by the Indian Government.

According to statistics furnished by the Department of Commercial Intelligence and Statistics, the number of plantations in 1929 was 3,390, covering an area of 252,767 acres, as against 2,782 with an area of 245,907 acres in the preceding year. New lands planted with rubber in the estates during the year 1929, so far reported, amounted to 8,668 acres, and the area of old cultivation abandoned to 4,820 acres, showing a net increase of 3,848 acres over the total area of 167,058 acres in 1928.

The total area under rubber in the year under report was thus 170,906 acres, which is 2 per cent above the area of the previous year, and of this area only 112,177 acres were tapped. Of the total area under cultivation, 53 per cent was in Burma, 30 per cent in Travancore, 9 per cent in Madras, 6 per cent in Cochin, and 2 per cent in Coorg and Mysore. The total production of raw rubber during the year is reported to be 28,022,842 pounds (*Hevea* 27,704,626 pounds, *Ceara* 302,433 pounds, and *Ficus elastica* 15,783 pounds), as against 26,839,332 pounds (*Hevea* 26,736,441 pounds, *Ceara* 64,278 pounds, and *Ficus elastica* 38,613 pounds) a year ago.

BUY NOW—New mechanical equipment such as conveying machinery, control instruments, pyrometers, etc., have been developed during the past year. Install them as substitutes for your obsolete equipment and increase your plant efficiency.

O'Neil Takes Up the Cudgels for the Independent Dealer

"TODAY, too many people are imagining, wrongly, that there is going to be some sort of complete change in methods of merchandising commodities. That is one of the principal things that is wrong with business today," said William O'Neill, president of the General Tire and Rubber Company, when he addressed the 11th annual convention of the National Tire Dealers' Association at the Sherman Hotel, Chicago, Monday, November 3.

"One trouble with business today is that production men, having evolved new production methods successfully have gone into the merchandising field and have attempted to bring about similar changes in a field in which they are not trained.

"This has resulted in the factory-owned tire store and in chain stores and mail order house merchandising.

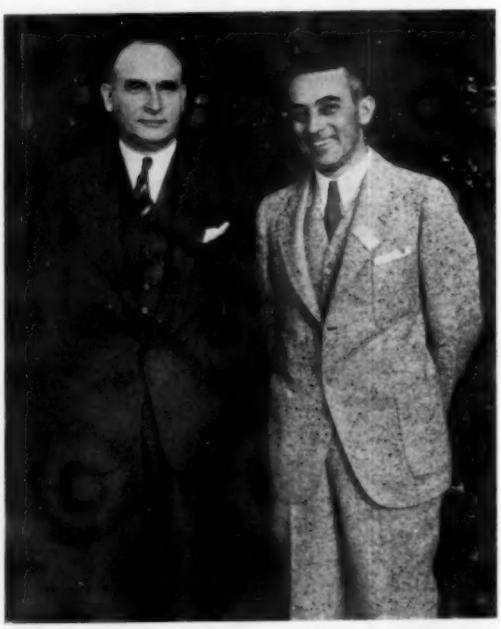
"They do not seem to have learned that the most efficient worker is a piece-worker, not a day worker. The independent tire dealer is a piece worker; the manager of a chain store, a mail order outlet or a factory-owned store is a day worker.

"You can get day workers to merchandise articles of small value, very cheaply, and they can do that work satisfactorily. However, when it comes to a matter of retailing an article that costs more than $5, you need a higher type of salesmanship.

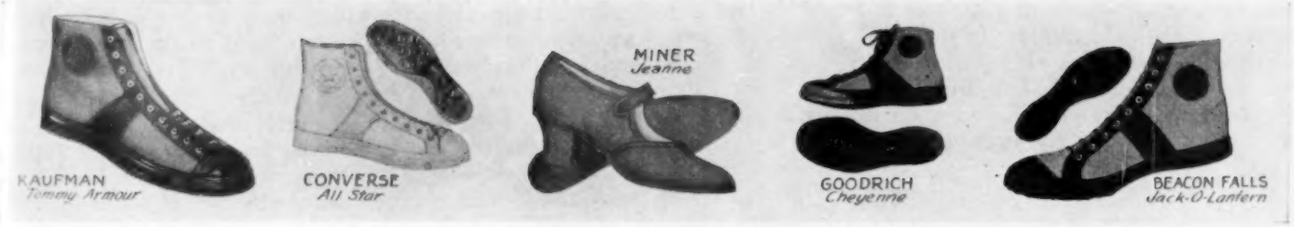
'The man who is capable of that type of salesmanship is not long content to be a day-worker. He wants to be in business for himself where he can capitalize on his ability to the greatest degree.

"That is why the independent tire-dealer will be the ultimate distributor of tires. That is why experience has proved that hardware merchants, wholesale drug and grocery concerns, and similar outlets cannot merchandise tires succesfully, and that is why tire merchandising through chain stores, mail order houses and factory stores will not succeed."

Mr. O'Neill cited figures to show that it takes three times as much capital for a factory to operate its own tire store as it would for an independent dealer to operate the same kind of store in the same city.



William O'Neil, president of the General Tire and Rubber Company of Akron, Ohio (left), with S. B. Harper, of Ft. Smith, Arkansas, president of the National Tire Dealers' Association, taken at Sherman Hotel, Chicago, during national convention of N. T. D. A.



Tennis Footwear Line for 1931 Tuned to the Times

Values Never Better—Slow Moving Numbers Eliminated to Speed Up Turnovers—No Radical Changes in Styles Outside of Minor Refinements—Suntan Replaces Browns as Favorite Color

THE annual announcements of the canvas rubber-soled footwear manufacturers of the new tennis line for 1931, which went out to the trade this fall have been later than usual, but at this time enough data has come in to indicate the general trend for the coming season.

The canvas shoe as a division of the rubber footwear business is in no sense a new product. Thirty-five years ago, one of the rubber footwear factories still in operation now, inserted the following advertisement in a trade paper: "10,000 pairs of tennis shoes a day we're making now. We've made tennis, bicycle, gymnasium, and white duck yachting shoes for 5 years—increasing every year. That shows they're good. Everybody is athletic these days. Everybody plays tennis, rides a wheel, or sails a boat. They all want sporting shoes."

This places the inception of tennis at about 1890, and it is quite significant that the appeal of the product to the sports public in those days is essentially no different than it is now. Canvas shoes today still have their widest vogue for tennis, from which they were named, basketball and gymnasium work, bathing and boating, and general play purposes for boys and girls. To date they have not been generally adopted for golf, although with the present trend of popularity of this game and indications that it will soon be played by the masses, there are possibilities in this direction.

Changes in Tennis Shoe Design

Improvements in construction, design, and appearance of canvas footwear have come along very slowly. From the year 1890 until 1916, there was little change in the product; —plain bleached or brown uppers, no trimmings, corrugated soles, balmoral and oxford heights, and that was about all. Just prior to our entrance into the World War, the introduction of leather trimmings, ankle patches, blucher cut, heavier soles marked the first radical change in the product, which started a line of higher priced numbers. About 1923 and 1924, when several new producers entered the field, these features were incorporated in the lower priced shoes and the real expansion of tennis shoe production began. Recent government figures show that the shipments of tennis shoes in pairs jumped from 28,000,000 in 1927 to 44,000,000 in 1929. While this is largely the result of developments in the domestic market, exports have played a very important part. Cuba, Porto Rico, Mexico, and the South American countries are large users of tennis shoes. Southern United States has also shown a tremendous increase in consumption which has helped to balance production as there the shoes are worn both in the winter and summer months.

Characteristics of 1931 Lines

Analysis of the offerings for 1931 shows that outside of several minor refinements, there are no radical changes. Suntan seems to be replacing brown as the most popular color. Prices have been reduced slightly, quality has been improved greatly. Better and heavier ducks are being used, and compounds are better. Perhaps the most significant thing is the drastic limitation of styles and the emphasis on fast turnover to the retailer. This step is not wholly altruistic for the retailer. Tennis prices, especially to volume buyers, are figured so close today that manufacturing operations must be conducted on a large scale to result profitably. Then again most of the factories are "conveyorized" today, which means large runs of one style or number are not only desirable but absolutely necessary.

Beacon Falls Rubber Shoe Company presents its line of "Grips" with an appeal to the independent retailer to whom this company caters. They state that the "Grips" basketball shoes have been so favorably received that they have extended this popular last to all of their leading shoes, "Grip-sure," "Cleeto," "Jack O'Lantern," "Rodeo" and "Crepe-sole Surestik." This foot conforming last is built on new scientific principles that provide firm support to the arch, give absolute comfort, and help develop speed. New patterns in the tops insure perfect fit.

Cambridge Rubber Company with its line of "Sneex" is making a special appeal with feature shoes to sports wearers such as tennis, basketball and squash enthusiasts. New

patented features are an adjustable arch support, latex outsoles, steel orthopedic shanks, and sole inserts at the ball and heel where the wear comes. In the lower priced field, new sole designs are shown with new calender imitation cut-out rolls, and a cold-press sole to imitate molding. The "Bearcat," of the Cambridge line, is further improved with golf ball inserts in the ball and heel.

Molded Shoes Featured in New Numbers

Converse Rubber Company presents its Basketball Yearbook for 1930, with 80 pages of data on this sport, in a new and attractive 9 x 12 size. Pictures of 256 basketball teams and their records are shown, together with articles on playing technique by the leading authorities of the game. The newest Converse shoes are also portrayed starting with the "All-Star" and "Hickory," shoes which, it is claimed, have been worn by every national championship team for the last

ten years. New numbers in the sport field are the "Big Five," a combination gym and basketball shoe, and a women's "All-Star," embodying all the features of the men's shoe.

Firestone Footwear Company presents eight new leaders in canvas footwear "for faster turnover and more profit" in 1931. They are the "Ace," which made its first appearance at Wimbledon this summer and featured a ventilated vamp; the "Thorogrip," a basketball shoe; the "Commander" with a cut-out sole; "Tire-tred," a molded sole shoe embodying the design of the Firestone tire tread; the "Trooper," a saddlestrap shoe with calendered cut-out sole; the "Peggy," a fancy duck upper cross strap pump for children; the "Dixie," a lace cross tie and the "Outing," a serviceable oxford.

The B. F. Goodrich Footwear Corporation offers its new line with "Chief Long Lance," a molded sole shoe, as the key number. The "Cheyenne" is a new popular priced number with a cut-out design sole and orthopedic shank with the same features as the "Long Lance" except the outsole. Other popular numbers are the "Victory" with gum sanded sole; the "Dribbler," a basketball shoe with arch strap and ventilating eyelets; the "Dean," a low back basketball shoe and the "Ringside" with cup-molded sole.

Canadian Companies Add Few Numbers

The Canadian companies to date are offering nothing of a radical nature in their new tennis lines. Kaufman Rubber Company, manufacturers of "Life-Buoy" outing shoes is showing a new shoe, the "Rustler," which carries a single texture duck upper. Fancy pumps and oxfords seem to have more of a demand across the border as all of the Canadian companies show a wider variety of them. Northern Rubber Company offers a varied line of trimmed sport shoes, untrimmed crepe sole shoes, and untrimmed rubber sole shoes. In the novelty field there are women's trimmed oxfords and one-strap slippers, women's plain one strap slippers, misses' and children's specialties, and plain sandals and one strap slippers. Bathing shoes are offered in blue, red, or green watered silk unlined rubber, effectively trimmed with contrasting colors, fine knurled sole, and drill insole. Miner Rubber Company emphasizes the boy and girl scout appeal in marketing their line of canvas shoes, and also, in line with the trend in Canada, shows many fancy pattern ducks in children's styles and some sportswear numbers.

Many of the companies specify that new deliveries on tennis shoes for 1931 cannot be had until January 1st, as most of the mills are working on winter merchandise at this time, when tennis shoe production is normally at a low point.

BUY NOW—Lots of your plant equipment needs replacements.

Census of Tire Manufacturers, 1929

CONCENTRATION of activities continues in the rubber manufacturing industry, according to a survey recently completed by the Bureau of Census. Another and more unusual development is the manufacture of tires and tubes as "secondary products," by firms engaged in other lines.

There were 91 establishments engaged primarily in the manufacture of tires and tubes at the close of 1929, the figures show, or 18 less than during the previous census year of 1927.

Notwithstanding, wage earners at the same time increased in number from 78,256 in 1927 to 83,015 in 1929. Wages paid these workers increase from $120,063,854, to $126,782,001, or 5.6 per cent.

The total value of tires and tubes produced by 91 establishments was $776,703,565 last year, as compared with $869,688,063 two years previous, a decline of 10.7 per cent.

In addition, rubber tires and inner tubes valued at $475,318 were made as secondary products by establishments engaged primarily in other lines of manufacture. The addition of these figures to those representing shipments or deliveries by establishments classified in the industry gives a total of $633,247,812.

The statistics for 1929 are summarized in the following tables with comparative figures for 1927. The figures for 1929 are preliminary and subject to revision.

Summary for the Industry: 1929 and 1927

	1929	1927	*Per cent of increase or decrease (—)*
Number of establishments	91	109	—16.5
Wage earners (average for the year)[1]	83,015	78,256	6.1
Wages[2]	$126,782,001	$120,063,854	5.6
Cost of materials, fuel and purchased electric current[2 3]	$431,189,902	$499,220,642	—13.6
Products, total value[3]	$776,703,565	$869,688,063	—10.7
Tires and inner tubes	$682,772,494	$779,533,129	—12.4
Other products	$ 93,931,071	$ 90,154,934	4.2
Value added by manufacture[4]	$345,513,663	$370,467,421	— 6.7

[1]Not including salaried employees. The average number of wage earners is based on the numbers reported for the several months of the year. This average somewhat exceeds the number that would have been required for the work performed if all had been continuously employed throughout the year, because of the fact that manufacturers report the numbers employed on or about the 15th day of each month, as shown by the pay rolls, usually taking no account of the possibility that some or all of the wage earners may have been on part time or for some other reason may not actually have worked the entire week. Thus in some cases the number reported for a given month exceeds the average for that month.

[2]Manufacturers' profits can not be calculated from the census figures because no data are collected for certain expense items, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.

[3]The cost-of-materials item for 1927 is not strictly comparable with the corresponding item for 1929 because of the fact that the schedule for 1927 provided for the inclusion of data on the cost of shop supplies, whereas that for 1929 stated that such data should not be included.

[4]Value of products less cost of materials, fuel, and purchased electric current. The figures for 1927 are not strictly comparable with those for 1929 because of the change in the cost-of-materials item. (See footnote 3.)

BUY NOW—Carbon black and other rubber chemicals are at a bargain.

PRIVATE LABELING of Rubber Goods PRO and CON

Gasoline Filling Station Now Competing with the Manufacturer's Own Distriubtors in Retailing the Same Grades of Tires but Under Private Brand Names

By WALDON FAWCETT

IT IS not solely in the field of rubber manufactures that private branding or private labeling, so called, has lately been pushed to the fore as a leading, controversial question of business policy. In dozens of different commodity lines the trend to "own label" operations is one of the conspicuous manifestation of the hour. The sharpened conditions of competition in merchandising, emphasized by the latter-day strategy of mail-order and chain store operation, have served as powerful incentives, that tempt both wholesalers and retailers to "dodge the issue" by proxy—identification of goods.

General as is the indulgence in dealer-imprinting and the featuring of "house specials" in various lines, it is no exaggeration to say that rubberdom has for its very own the most acute issue in private labeling. For years past there has been an increasing disposition in the tire field and in the sector of miscellaneous rubber goods to flirt with the idea of private branding. Once the large catalogue houses took to handling tires, the fat was in the fire. Latterly, the issues has been intensified many fold by the moves of large oil interests that have undertaken the distribution, through their gasoline filling stations, of tires under special nickname.

Private Labeling Calls for Study

Since private labeling in its present proportions is evidently here to stay for some time to come, and is susceptible of further ramifications, it is perhaps only the part of wisdom for every member of the rubber industry to look the fact in the face and draw his own conclusions as to probable consequences. Any impartial observer will admit that there are both advantages and disadvantages in private brand operations. Which will outweigh in trade estimation in the end is anybody's guess. But, assuredly, for the time being, the only sane course for the rubber realist is to make careful analysis of this odd impulse to individualism in a business world given over mainly to the spirit of collectivism and consolidation. Patently, all management policies dealing with consignment selling, factory branch operation, exclusive sales agencies, etc., will henceforth be influenced by the fate of private labeling.

Two separate and distinct lures coax distributive interests to masquerade as producers through the camouflage of the private brand. Both forces are operative, in varying degree, in the rubber industry. On the one hand, there is cultivation of prestige. In the estimation of many distributors it adds to the standing and reputation of a jobber or merchant if he may impute a volume of operations and a solicitude for his responsibilities that finds expression in private or "controlled" brands. Even if the distributor cannot convey, as some do, the idea that he actually manufactures for his own trade, he achieves the same sentimental distinction by representation that the private labeled goods are made expressly to his order and in accordance with his exacting specifications.

Private Branding to Avoid Price Competition

As the second incitement to private branding, we have to reckon with the competitive price equation. Rightly or wrongly, a large and ever-increasing proportion of merchandise distributors in various lines have become convinced that by invoking private brands, and only by this dodge, may they lift themselves out of the rut of more or less ruinous price competition. The theory is that with a unique, exclusive, private brand to bear him out, a distributor may play up to the customer all manner of claims of quality, and there will be none to say him nay. No rival may literally match prices or undersell because no rival may offer goods under the same trade name. Just in proportion as price competition pinches in the case of national brands or unbranded staple goods, is the hard-pressed merchant tempted to sidestep the struggle and take such refuge as he can conjure for himself behind his "own label."

On the score of the impulses of human nature that lead to private branding, rubberdom is subject to the same dealer-psychology that is, just now, in play elsewhere. As it happens, though, the machinery of private branding in the rubber industry differs significantly from the arrangements in most other commodity lanes. This disparity in the set-up must needs be given careful consideration by the individual who undertakes to discount the future of "ghost labeling" in the rubber line. Because, upon the physical resources of capital investment in private branding may depend the scope and tenacity of the practice.

In many of the commodity lines in which private labeling first gained foothold, the sole or principal source of supply for sellers of private brands is afforded by the factors known as "private-branders-to-the-trade." The ap-

proved or typical example of private brander to the trade is a manufacturer who devotes himself to the service of any and sundry owners of pet brands. Presumably this producer markets nothing direct to consumers. Or, if he does, only a small surplus which goes forth unidentified. Literally, the private brander to the trade is a contractor, stenciling his wares with any designations the customers prescribe.

For all that some distributors would like to disseminate this fiction, the private-brander-to-the-trade is seldom prepared to manufacture to distributor-specification. Instead, the outfitter has his own formula which he shares with his customers. Virtually he is supplying stock items, christened according to individual taste. In not a few instances the private-brander-to-the-trade owns a whole battery of brand names and "farms out" an appropriate nickname to a private brand seller for a contracted term or during the continuance of business relations. In other instances, the merchant or distributor has title to the private brand which he counts upon to build up his good will and licenses a private-brander-to-the-trade to pack and deliver specified quantities under an indicated brand.

Ethics Involved in Branded Tire Selling

In contrast to this conventional process there is an alternative program which obtains nowhere so conspicuously as in the rubber industry and which involves, in the minds of many persons, a nice question of ethics. Under this latter system, goods under private brand eminate from factories, the bulk of whose output is sold under the manufacturer's brands. There is no question but what the offer of large orders from a single source has tempted makers of nationally-advertised factory brands who would not for a moment think of entering upon the promiscuous operations of the average private-brander-to-the-trade. At the same time, such digressions are responsible for the friction which is being encountered by tire manufacturers who have labeled their goods for mail-order distribution in direct competition with their own lines in the hands of their exclusive dealers. The advantages of private branding—or, shall we say, the temptation which the practice lays upon competition-harried distributors, has been hinted above. Counterbalancing this in considerable degree are worries and disadvantages. One of the most serious menaces for the distributor is the difficulty of maintaining and insuring quality in the goods under private brand. If a merchant is merely distributing, in reserved territory, a brand delegated to him by a manufacturer who has brands for lease, the agent is obviously at the mercy of his principal. If, on the other hand, the distributor owns his brand there is the problem of sustained maintenance of the quality which won consumer confidence for the brand. It may be necessary to change contractors more or less frequently to uphold standards of quality. And, as if this bother were not enough, private brand owners, undertaking to shift manufacturing connections, have not infrequently found themselves enmeshed in legal tangles over questions of ownership of the brands which they thought they had only loaned but which a supply interest insisted had been assigned.

Private Brand "Runs" Must Be Large

One of the most serious indictments drawn against private branding by its critics is that the practice is necessarily a defiance of all modern advanced ideals of close inventories, rapid turnover, short ordering, and consistent stock rotation. From the very necessities of production arrangements, private branding presupposes quantity purchases. No manufacturer can afford to arrange for special imprinting unless the "run" is sufficient to warrant the cost of the special departure in labeling arrangements. This means that the small or medium-size distributor, if he is to indulge his vanity for a private label, must order in quantities not justified by the principles of scientific stock control. Not to mention the complications of stock storage and the treason to the ideals of perpetual fresh stock.

Dulling the Brand-Consciousness of the Consumer

Marketing specialists who are disquieted by the spread of private branding in the rubber trade voice the fear that one of the unconsidered consequences of the orgy may be to dull the brand—consciousness of the rubber-consuming community. Up to this time, the rubber industry has been in a particularly strong position in respect to control of repeat orders owing to the fact that the field was dominated by a number of strongly individualistic, well established trade names. Trade-marks there have been in plenty but the leaders have had widespread or national distribution and the benefit, in many instances, of display in exclusive agencies. The result has been to make all the traditional rubber brands familiar to the general public and to insure ready-made marketing momentum for any new item put out under a time-tried "family" name or tying-mark.

Just when some of the time-honored trade names of rubberdom are being absorbed in mergers or consolidations, behold the current deluge of private brands. And the business doctors tremble for the consequences. Mere multiplicity of brand names in any commodity lane is bound to befog consumer remembrance, unless countered by continuous heavy advertising. The peril is all the greater if the influx is made up largely of private brands. Because, private brands, as a class, are shorter lived than manufacturers' brands. Ultimately, the effect of a preponderance of private labels, and a high mortality among these private labels, must be to jeopardize the habit of the public to buy by brand. Similarly, the effect of spotty and isolated private branding is to detract from the cumulative potentialities of full-line branding which has been a tradition in the rubber industry.

Legalizing Price-Fixing on Branded Goods

Very recently a new note has been injected into discussion of private labeling by the sounding of an alarm that the benefits of legalized "resale price fixing" would be denied to goods under private brand. After years of waiting, it is only in the present Congress that there is a chance for a record vote on the Capper-Kelly Fair Trade Bill, designed to enable marketers of trade-marked goods to fix and enforce standard retail prices. Distributors in certain lines have taken fright lest the use in the Bill of the word "producer" bar them and their private brands because the term "producer" is not defined to include dealers. Officials of the American Fair Trade Association have hastened to disavow any discrimination in price control as between manufacturers and dealers owning private brands. Nevertheless, the situation which has been created is operating to place private brands on the defensive in a new direction.

BUY NOW and enjoy increased profits on your stock inventory values as the upward swing in business develops.

The Thirteenth Exposition of Chemical Industries will be held at the Grand Central Palace, New York City, during the week of May 4, 1931, under the management of the International Exposition Company. Information and allotments of space can be secured by addressing Charles F. Roth, Grand Central Palace, New York City, N. Y.

Rubber in Modern Upholstery

New Possibilities for the Use of Rubber Lie in Its Substitution for Textiles—Rubber Thread Possesses Unusual Properties for this Field

By GEORGE RICE

Figure 1

In this section of a car seat the arrows point to parts of the upholstery which should possess good resilient properties to stand the body pressure and at the same time give maximum easy riding to the occupant

THE last few years has seen a steadily increasing demand for a type of hangings, upholstery fabrics, cushions, carpets and rugs of a somewhat different design from those of former times. The general use of the automobile has had something to do with the change in the mechanical construction of these fabrics for the reason that the designers and builders of modern cars require linings, seat coverings, and floor mats and rugs to be capable of absorbing sound and vibration in addition to being comfortable and pleasing to look at. Even the builders of the latest models of air craft for commercial and private use are trying out samples of fabrics in which resiliency of the texture is the important feature rather than style and beauty. The manufacturers of the kind of period furniture which is coming into fashion are also experimenting with upholstery in which springiness is featured without approaching the sponginess which is not desirable in the heavily constructed models of chairs, sofas and related descriptions of cushioned equipment.

The manufacturers of rubber may well undertake to get a share of the business which at present goes to the textile mills. A few drawings to illustrate what is wanted are presented.

We will take the motor car industry as an example. A recent interview with the superintendent of the upholstery department of a large automobile factory revealed that there was a desire for greater elasticity and pliability on seat covers so as to attain a maximum of easy riding so far as the seats are concerned.

The object is to reduce vibration at every possible point in modern cars. Steel springs help do this in most car seats, but it is assumed that if greater resiliency can be obtained in the upholstery, a further gain will have been made towards more comfortable riding. A section of a car seat is shown in Figure 1, in which the points of contact with the body of the person in the seat usually are where indicated by the arrows. Ordinary padding tends to flatten and lose its softness in time, because of its lack of recoil and expansion like rubber. Even textile threads made of wool, or pile work composed of the best of mohair gets pressed down by the heavy weight and the seat gets hard.

Rubber Threads as an Boistering Medium

Rubber in the form of threads, like in any other form, possesses the valuable property of resuming its original shape when released after stretching or pressing. Rubber threads therefore can be utilized as the technically called stoffer warp threads in pile holestery on the plan shown in the section of a tapestry fabric in Figure 2. The ground warp, which forms the foundation for the pile, is cotton and provides the strength which is necessary, without being seen, as the wool or mohair pile covers it. Nor are the rubber threads seen, for these form the stuffing, and instead of being made of hard shoddy stock, as ordinarily, they

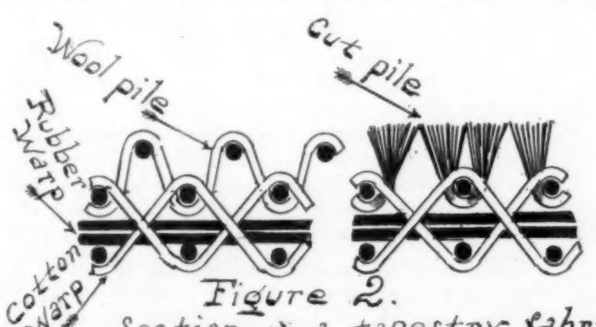
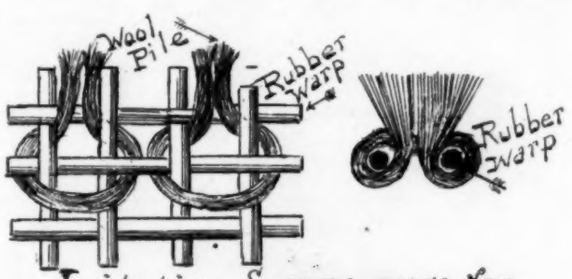


Figure 2.
Section of a tapestry fabric in which the thickening warp is composed of rubber threads.



Imitation Smyrna rugs for automobiles are made with a rubber thread warp and a soft wool pile. Figure 3.

Section of an upholstery fabric made with a cotton ground warp, rubber filling and wool pile.
Figure 4.

are made of rubber, a material which retains its softness indefinitely.

The manner in which the threads of the cotton warp and the wool pile are interlaced is shown at the left, and the appearance of the same after the wool pile loops are cut to make the pile effect is shown at the right. This is a machine woven structure, while that in Figure 3 is hand made so far as the pile loops are concerned. It is a Smyrna rug weave, but is also applicable to upholstery cloths. In this case the enter warp system is made of rubber yarn. The tufts of wool to make the pile are inserted by hand by the hand rug makers, usually India artisans, who get high prices for their work.

Still another kind of upholstery fabric in which rubber forms a part is shown in Figure 4, in section, that at the left with the pile loops uncut and that at the right with the pile loops cut. The ground warp is cotton, the pile warp is wool and the filling is rubber.

Construction of the Rubber Threads for Upholstery

The rubber threads are given the proper structural balance for weaving purposes by plying them with cotton, linen, mohair or other kinds of staple textile threads as shown in Figures 5 and 6. The process of doubling and twisting the strands together is accomplished on the standard doubling and twisting frames used in textile mills. In the manufacture of sewing thread, for example, a number of finely spun filaments of cotton or linen or silk are combined and twisted into a single strong, even thread. In the manufacture of yarn in which rubber forms a part, one or more of the rubber filaments are similarly combined with one or more filaments of a fibrous nature. The combination in Figure 5 consists of two cotton threads twisted with one of rubber. A four ply rubber and linen and mohair combination is shown in Figure 6.

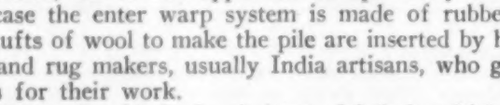


Figure 5
A rubber thread supported by two cotton threads in a three-ply twist.

Figure 6.
A four-ply rubber and textile combination.

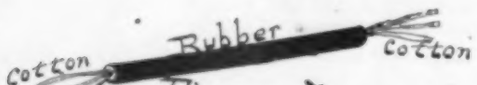


Figure 7.
Three strands of cotton encased in a rubber coating

Most of these specimens were procured from French mills that have been experimenting with the different methods of employing rubber threads and part rubber threads in fabrics for a long time. The writer visited several mills in the textile manufacturing centers of France while he was there with the army in 1918, and was shown some of the work along these lines. An overseer in one of the plants visited had produced a weaveable thread made up with three strands of cotton for a base, with a rubber coating, as shown in Figure 7. The pliability of rubber thread is important if it is to be used as a filling yarn in a fabric for the reason that it must be wound about a wooden bobbin and coiled off smoothly and without kinks when the shuttle in which the bobbin of thread is driven from side to side through the warp threads in the weaving action of the loom. The layout of the bobbin of thread is shown in Figure 8. When the thread, whether it be rubber or common textile stock, is used as warp, the conditions are different, for warp threads extend straight through the fabric from end to end, and are laid straight in the warp beam and through the harnesses, the reed and other mechanical parts of the weaving machine. The most bending to which a thread of any kind is subjected is in knitting, for the reason that the thread has to be bent into miniature loops to form the stitches and join up each loop with its following loop.

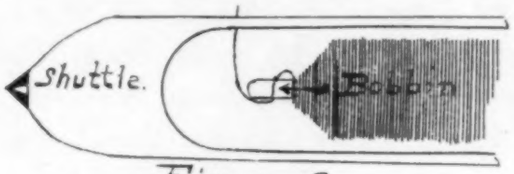


Figure 8.
Rubber thread, like cotton, wool or silk thread, must be pliable enough to be woven from a bobbin carried in a loom shuttle.

Fairly Heavy Rubber Thread Most Suitable

When rubber thread is used alone in the ground structure of upholstery or rugs, it has to be fairly heavy. Size number 20, which sells for about $1.00 per pound at the factories, has been used with satisfactory results, although sizes heavier or lighter are available to suit the conditions essential to the various weights and thicknesses of the fabrics the rubber threads are to go into.

The object of using rubber in upholstery and rugs for cars or for cabins of airplanes is not to cheapen these goods. If it were, low grade rubber threads would be used, costing much less than a dollar a pound. The object is to give a bouyancy to the fabrics with a material which will stand the stresses of hard autoing and flying without succumbing like some of the stuffing substances which are used now.

BUY NOW—New mechanical equipment such as conveying machinery, control instruments, pyrometers, etc., have been developed during the past year. Install them as substitutes for your obsolete equipment and increase your plant efficiency.

The Viscosity of Rubber Solutions under Influence of Benzoyl Peroxide*

A Contribution to Methods for Determining Inorganic Fillers, Etc., in Rubber Mixtures

By G. FROMANDI

IN THE determination of mineral and certain organic substances in rubber mixtures by the aid of disintegration with paraffin oil or anisol, difficulties occur during filtration in the presence of golden antimony which require the use of a centrifuge, since the relatively high viscosity of the colloid system does not permit a sufficiently high rate of sedimentation for practical purposes. Some investigations of rubber mixtures containing golden antimony, in which for certain reasons the use of a centrifuge was impracticable, necessitated the development of a method which would obviate the use of a centrifuge. By means of decalin (decahydronaphthalene) and benzoyl peroxide it was possible to so control the ordinary disintegration that the sedimentation of the filler and antimony particles increased to such an extent that filtration was no longer difficult.

The method[1] is as follows:—The material, which has been prepared as usual (about 1 g. of the original sample), is placed in a weighed, wide-necked Erlenmeyer flask of about 300 cc. provided with an air condenser and is covered with 40 cc. of decalin of boiling point 191° C. (the required quantity of which should be especially purified by distillation at the time). It is heated at boiling temperature until the rubber substance is almost completely dissolved, according to the composition of the mixture, the time required being from four to eight hours[2]. To the mixture 1-1.5 g. of "purest" benzoyl peroxide is added, and it is boiled from one to two hours more until the brown coloration of the golden antimony appears. After cooling, the flask is almost wholly filled with petroleum ether (having a low boiling point), and is allowed to stand until the precipitate is settled out. After twenty-four hours at the most separation is complete and the usual subsequent treatment can be carried out without difficulty, for which a porcelain or glass filter cup with not too coarse a filter plate is found advantageous. The precipitate in most cases rests so firmly on the bottom that the clear liquid above can easily be removed quantitatively by thorough decanting.

This method is suited not only for vulcanizates containing golden antimony but also quite generally for the determination of inorganic fillers in rubber compounds. The chemistry of the action of benzoyl peroxide on these systems may probably be explained by the fact that benzoyl peroxide undergoes decomposition under the influence of high temperatures, resulting in the formation of a new hydrocarbon or of diphenylbenzoate, biphenyl and oxygen which acts directly on the double and molecular compounds still present, splitting the sulphur bridges and probably has a disaggregating effect as well. This results in a relatively great diminution of viscosity, which approaches a value scarcely different from the pure solvent.

In connection with the method developed, the influence of benzoyl peroxide on a solution of rubber in benzene was investigated more closely, and in the investigation it was assumed that decalin as such does not influence the degree of polymerization or of aggregation of the dissolved rubber to any essential degree, and as a result can be replaced by benzene.

The system used in this series of experiments consisted of a solution of 1 g. of rubber or of 1 g. of rubber + 1 g. of benzoyl peroxide in 100 cc. of benzene, and was studied viscosimetrically under the following physical conditions:—

- A Peroxide-free solution in the dark
- A' Peroxide-free solution in diffused daylight
- B Solution containing peroxide in the dark
- B' Solution containing peroxide in diffused daylight
- A" Peroxide-free solution in diffused daylight heated to 80°
- B" Solution containing peroxide in diffused daylight heated to 80°

The first latex crepe, which had an acetone soluble content of 2.84%, was dissolved in benzene after a twelve hour extraction with acetone. After the small quantity of impurities had settled out, it was filtered through glass wool and then through wadding with the most careful exclusion of light and air, precipitated by the careful addition of acetone, and dried *in vacuo* at 50° to constant weight. The benzene solution thus obtained was entirely clear and practically colorless. The Ostwald viscosimeter used had a capillary diameter of 1 mm., the quantity of liquid amounted to 2 cc.[3] and the temperature of the bath was 25°±0.2° C. Since the measurements were only relative, the time of passage of the flow was measured only in seconds.

The influence of benzoyl peroxide on the rubber benzene solution (which contained both 1 per cent of rubber and 1 per cent of benzoyl peroxide) under varying physical conditions led to a relatively great depression in the viscosity, which the following curves show in relation to the time of treatment (See Figure 1).

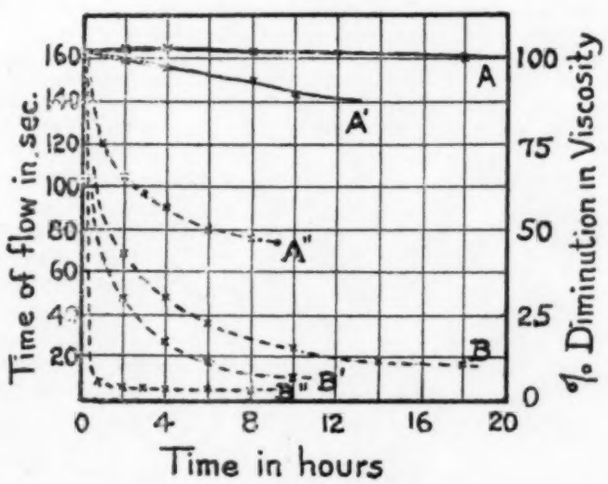


Figure 1

Influence of benzoyl peroxide on the viscosity of a 1 per cent. solution of rubber in benzene under different physical conditions

*Presented before the Deutsche Kautschuk—Gesellschaft, Frankfort-am-Main, June, 1930. Translated from Kautschuk.

The form of the curves show that benzoyl peroxide reduces the viscosity of the solution to a marked degree. The different relations between the diminuation in viscosity and the time according to the nature of the physical conditions and the tendency for these relations to approach definite values which are markedly different are also characteristic of the system. Heating at 80° C. in daylight caused even after one hour an increase in viscosity of about 95 per cent, in the dark of 91 per cent, of the original value of the solution, while the peroxide-free solution after the same time underwent a diminution of only 26 per cent. On standing in diffused daylight the corresponding values were 58 and 2 per cent, respectively. Similar results were obtained in the dark. The numerical difference in the viscosities compared with those of solutions under the influence of diffused daylight is relatively small, showing that this factor plays only a secondary part in the influence of benzoyl peroxide on rubber solutions.

Because of its high sensitivity, determinations of the viscosity of the peroxide-free solution as a function of time over a period of one day, or 8 to 10 hours, leads to relatively great divergences of the individual experimental measurements, since "diffuse daylight" is subject to continuous variations. It is recommended therefore that in such cases all measurements be made under the most nearly comparable conditions on the same day, so that variations in the results are minimized as much as possible.

Similar results were obtained with direct sunlight, where the samples were exposed on the roof of the laboratory. Table I shows the influence of direct sunlight on the viscosity.

Table 1

The Viscosity of a 1 Per Cent Rubber-benzoyl Peroxide Solution under the Influence of Direct Sunlight.

Exposure to light in days	Time of passage of flow of solution in seconds		Diminution of viscosity of Solution in per cent	
	Peroxide-free	*Containing Peroxide*	*Peroxide-free*	*Containing Peroxide*
0	163.5	—	—	—
1	94.5	8.6	42	95
3	61.5	5.3	62	97

Direct sunlight causes a great decrease in the viscosity of both solutions, and this diminution during the one day's exposure is numerically about the same as the diminution which was obtained by heating for eight days at 80° C., and is distinguished from the latter only by its rate.

An investigation which is closely related to that above and which deals with the behavior of both solutions under the influence of ultra-violet light[4] (analytical quartz lamp of Heräus-Hanau) gave the results in Table 2[5]. The experimental equipment consisted of a graduated quartz test tube containing the solution, which was placed about 21 cm. from the burner whose light by the insertion of a black glass filter corresponded to a wave length of 366$\mu\mu$. A current of oxygen-free hydrogen was slowly passed through the solution in order to keep away the atmospheric oxygen as well as the ozone which was formed under the influence of the ultra violet rays, and in order at the same time to keep the surface renewed at all times. To determine the viscosity, 2 cc. were removed and after the measurements they were returned, while the loss of solvent by the gas stream was replenished. The temperature averaged 22° C.

Table 2

The Action of Ultra-Violet Rays on the Viscosity of a 1 Per Cent Rubber-benzene Solution, (a) Peroxide-free and (b) Containing Peroxide.

Exposure in hours	Time of flow in sec. of Solution		Diminution of the Solution in per cent	
	Peroxide-free Solution	*Containing Peroxide*	*Peroxide-free*	*Containing Peroxide*
0	163.5	—	—	—
1	84.9	16.8	48	90
2	60.7	10.0	63	94
4	46.7	7.2	72	95
6	36.8	6.0	77	96

The table shows that the diminution in viscosity of both the radiated solutions approaches both in its magnitude and in its dependence upon the time that obtained by warming and secondly the table shows that the action of benzoyl peroxide on rubber in solution under the influence of ultra-violet rays undergoes a considerable acceleration.

In the reaction system which was thus studied under different physical conditions, the lowering of the viscosity was probably above all a result of an attack by the benzoyl peroxide on the double or molecular bonds of the rubber and also a result of its state of aggregation. At elevated temperatures the first factor probably predominates, which would explain the numerical difference in the viscosimetric data compared with the measurements at room temperature. The form or the course of the viscosity curves is to be regarded as a measure of the rate of oxidation and of disaggregation.

Benzoyl peroxide, which is used at the present day more and more for bleaching oils, fats, waxes and resins, according to Ostromislensky[6], is a substance which is capable of vulcanizing rubber in the absence of sulphur, and which in the presence of sulphur plays the part of a vulcanizing agent. Whether these peroxide vulcanizates can be regarded as identical with sulphur vulcanizates in their essential physical and chemical characteristics or merely as pseudo-vulcanizates must remain uncertain for the present time. Experiments in this field, which may be considered as a contribution to the problem of vulcanization in general, are however in progress, and will be reported in a later publication.

References

[1]Cf. the method of Scott for the determination of fibrous and other mechanical impurities in unvulcanized rubber, *India Rubber J.* **79**, 158 (1930).

[2]In the presence of certain kinds of reclaimed rubber the heating must be prolonged.

[3]The viscosity curve for the solution containing peroxide which was heated at 80° in darkness coincided so closely with the curve of the corresponding irradiated solution that the slight numerical differences can from a practical point of view be disregarded.

[4]According to Scheibe and Pummerer [cf. *Ber.* **60**, 2163 (1927)] rubber absorbs only below approximately 230$\mu\mu$, with a maximum around 200$\mu\mu$.

[5]The measurements are naturally of a more or less exploring character, since the position of the absorption range of benzene does not permit of an unequivocal conclusion.

[6]*India Rubber World*, Vol. **80**, Dec., 1929, p. 55, in which article references to earlier literature are cited.

Production of Carbon Black from Propane*

A STUDY has been recently made by W. B. Plummer and T. P. Keller, of General Atlas Carbon Company, New York City, N. Y., on the effect of various factors on the production of carbon black from propane, using an apparatus similar to that of the commercial channel process. These factors include height of channels above the flames, per cent combustion and temperature of channels. Results show the possibilities of production of good grades of channel-process carbon black from the higher gaseous hydrocarbons and cast considerable light on the factors concerning that process.

Very little data is available relative to the operating characteristics and governing factors of the channel process. It has been possible in the ordinary channel process to produce blacks of certain definite properties but in low yields, and in special processes to produce blacks in higher yields, but having modified properties. The causes for these differencies are not definitely known and it has not yet been possible to control the variation in yields and properties simultaneously. No clear cut conclusions were made by the authors but it is hoped that the results may be stimulating to other research workers in this field.

One of the factors shown most directly by the results is that carbon black equal in quality to that made from methane may be made from hydrocarbons as high as propane, although this presumably ceases to be true with the higher liquid hydrocarbons. The close agreement between various maxima observed for propane with the operating conditions of the commercial channel process using methane shows the essential identity of the basic reactions of the two gases.

The function of the channels is clearly shown to be mainly a cooling effect by the very large change in yields and properties ob-

* *Industrial and Engineering Chemistry*, Page 1209, Nov. 1930.

served when the channels are superheated to 650 degrees Centigrade. With further cooling to temperatures below the optimum the yield is not much greater, while the properties are lower in general. It has always been generally assumed that the function of the channels is that of a cooling agent and it has been known that this has a lower limit of desirability, but the present results show this effect more clearly.

On complete removal of the channels the yield and properties are not so much diminished as might have been expected from other considerations. Although an entirely different type of black might have been expected in this case, that which was actually produced must apparently be regarded merely as an inferior grade of channel black. In other words, while the presence and cooling action of the channels do control the yield and quality of the black the limit of variation of properties is such (compared with properties of blacks made by other processes) that it cannot be definitely said to control the type of black made . . Furthermore, from the data presented it does not appear that the type of black is appreciably affected by the atmosphere surrounding the flames, —i. e., the per cent excess air,—for similar temperature conditions. It must therefore be concluded that the type of black is determined by conditions within the flame itself, - i. e., such factors as size, shape and temperature of the gaseous layers, the temperature of the luminous carbon particles, etc. Certain of these factors are not susceptible of direct investigation. Certain of the others have been the subject of special studies, which have not, however made possible general conclusions as to exact cause of difference in type of black produced by various luminous flames.

BUY NOW—Stock up with compounding materials at their present low prices.

Rubber Vulcanized with Trinitrobenzene

ORDINARY vulcanized rubber quickly tarnishes copper, silver, and mercury by reason of its sulphur content, according to the *Technical News Bulletin* of the United States Bureau of Standards. However, when 1, 3, 5 trinitrobenzene is used as the vulcanizing agent instead of sulphur, rubber is obtained which has no apparent action on the above metals. Rubber tubing made with trinitrobenzene has been used in contact with mercury for several months with only slight fouling of the metal. When trinitrobenzene rubber is vulcanized in contact with copper, not only does the metal remain bright, but the aging qualities of the rubber are practically unaffected, quite contrary to the result obtained with sulphur vulcanized rubber under similar circumstances.

In order to ascertain quantitatively the extent, if any, to which copper was attacked by trinitrobenzene rubber, fine wires of known resistance were embedded in the rubber prior to vulcanization. Measurements of resistance made after vulcanization showed a decrease in resistance of about 0.1 per cent, which was probably due to the annealing of the wire. A comparison sample of copper wire, which was vulcanized in contact with a rubber compound containing a low percentage of sulphur and an ultra-accelerator, increased in resistance by 8 per cent. This indicates clearly that any action of trinitrobenzene rubber on copper is negligible in comparison to the effect of the most favorable sulphur-vulcanized rubber.

Trinitrobenzene rubber was also vulcanized in contact with silver, nickel, iron, manganin, advance, and nickel silver. In no case was there tarnish or other indication of attack on the metal.

The trinitrobenzene rubber used in these experiments was made according to the following very simple formula:

	Parts
Pale crepe rubber	100
Zinc oxide, "Kadox" brand	100
1, 3, 5 trinitrobenzene	2
Total	202

The time of vulcanization employed was 60 minutes at 141° C.

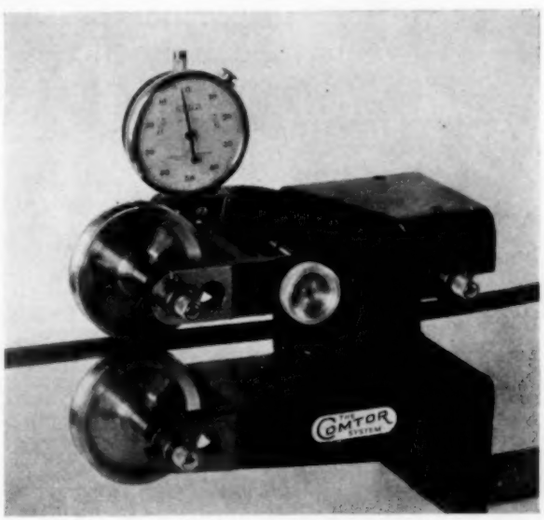
Trinitrobenzene rubber may find an important application in the manufacture of electrical insulation by reason of the fact that it may be applied directly to copper without the necessity of tinning the latter. In view of this possible use, the electrical properties of trinitrobenzene rubber, made according to the above formula, were determined. The dielectric constant and power factor at 1,000 cycles, 27° C., were 3.84 and 0.006, respectively. These are approximately the same as for sulphur-vulcanized rubber containing the same proportion of zinc oxide. The resistivity was 1.4×10^{15} ohm. cm., which is somewhat less than for rubber vulcanized with sulphur, but adequate for practical insulation purposes.

BUY NOW—Some of your molds are old. Replace them now before business picks up. Save any interruption in your future production schedule by making the change now.

New Comtorgage-W

A CONTINUOUS gage for use in controlling the diameter in the production of insulated wire and cable is the latest instrument offered to the industry by the Comtor Company, Waltham, Mass., manufacturers of precision instruments and gaging devices. The new instrument is accurately controlled to specified diameters, thus avoiding rejections and economizing material.

The new model is known as Comtorgage-W. Its general construction is evident from the accompanying illustration. The cable passes from the insulating machine through the Comtorgage-W, between the floating rolls which continuously gage the size and show the exact diameter in thousandths of an inch on the large indicator dial.



Comtorgage-W

The 90 degree grooves in the gaging rolls contact with the insulated wire or cable with constant uniform pressure at four contact points equally spaced along the circumference. As a result the dial shows the true average diameter, even though the wire or cable be slightly oval or out of round.

With an eye on the dial and a hand on the control lever, the operator regulates the insulating machine to produce continuously the exact specified diameter of insulated wire or cable.

The machine can be used successfully in gaging rubber covered wire in sizes down to 1/16" diameter. The size model shown above has a capacity up to 1¼" diameter of cable. Another model, which the company manufactures has a capacity up to 3½" diameter. In the large size models the gage is floated and balanced to follow the cable.

EDITORIAL COMMENT

BUY NOW

WE are passing through a period of readjustment in all phases of our business and industrial life. All authorities agree that the depression has run its course and the trend must soon be upward. Business today is slower than it should be. The "scare" is being overdone. Pessimism and lack of confidence should be relegated to the background.

While we are in the midst of this period of readjustment, far-sighted executives of the rubber industry cannot fail to see that this is the most opportune time to rehabilitate their plants and mechanical equipment and replenish their stocks of raw materials. Prices were never so low as at this time. Purchases of raw materials made now will be reflected in profitable gains in inventory values later. Purchases of machinery and equipment made now will allow for uninterrupted production schedules and greater plant efficiency when the upward swing manifests itself.

By buying now,—at present advantageous prices,—the rubber industry will not only be assuring itself of future sources of supply, by enabling producers of machinery and supplies to maintain their production organizations, but they will be aiding the movement to help relieve unemployment and hasten business revival generally. Both crude rubber and cotton, as well as most of the chemicals and compounding materials used in the industry are at rock bottom prices,—but won't stay there long. Changes in equipment can be made today with the least disruption to production and at more economical costs. The purchase of new rubber machinery today could not be more timely.

Executives with vision must sense this opportunity. BUY NOW. REHABILITATE YOUR PLANTS—PURCHASE SOME NEW EQUIPMENT — REPLENISH YOUR STOCKS OF RAW MATERIALS AND OTHER SUPPLIES.

The RUBBER AGE

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

PREDICTS TIRE SHORTAGE TO FIRESTONE FOREMEN

The annual conference of Firestone Tire & Rubber Company foremen was held at the Akron factories on October 28, 29 and 30 with more than 350 in attendance from Akron, Los Angeles, Fall River, Hudson and Canada. The opening address was made by R. R. Gross, factory manager at Akron, who predicted a coming shortage of automobile tires in the United States.

"We may not succeed in launching huge activities right after the close of our fiscal year," Mr. Gross declared, "but before the next fiscal year has gone much beyond July, we'll be facing such a tremendous demand for tires that we won't be able to keep up with it. A tremendous tire shortage is in the making right now. Either the American motorist is prepared to lay his car away or he's going to go about the business of preparing to buy tires for it—and I can't see the American motorist thinking seriously about abandoning one of the chief pleasures and real necessities of modern day life." He closed with the assertion that labor-saving machinery would never encroach seriously on the employment of labor because of the continual rise of new industries in this country.

Other speakers included George Danielson, vice-president of the Firestone Cotton Mills, Inc., Fall River, Mass.; John Miller, factory manager of the footwear division plant, Hudson, Mass.; J. H. Norman, factory manager of the Firestone Tire & Rubber Company Ltd., Hamilton, Ont.; W. K. Brown, production manager of the Los Angeles tire factory; and K. W. Gasche of the Firestone Battery Company.

Pioneer Department Closed

Due to the decreased demand for footballs, the Pioneer Rubber Company, Willard, O., has closed that department of its plant and has transferred the workers to other departments. Officials of the company report 200 persons employed at the present time and business is said to be very satisfactory.

Open United Carbon Laboratory

The new rubber laboratory of the United Carbon Company at Charleston, W. Va., was opened a few weeks ago, and delegations of chemists from the Goodyear Tire & Rubber Company, the Firestone Tire & Rubber Company and the B. F. Goodrich Company have been brought down in airplanes to visit the structure during the past few weeks. C. R. Park, former Goodyear chemist, is in charge of the new laboratory.

Converse Head Missing

Mitchell B. Kaufman, president of the Converse Rubber Company, Malden, Mass., who disappeared on November 5 while on a hunting trip with other members of the firm in the densely wooded north country between Jackman, Me., and the Canadian border. Mr. Kaufman is also president of the Hodgman Rubber Company and the Archer-Strauss Rubber Company.

MAHONEY SEES GREATER PROSPERITY IN FUTURE

"The best thing that will happen in the year 1930 will be the ringing out of the midnight hour of Dec. 31," Paul R. Mahoney, executive vice-president of the International B. F. Goodrich Company, New York, told the Foreign Trade Conference held in Cleveland, Ohio, recently.

"Next year we shall enter into a new era when we shall no longer be comparing the business of a year of depression and readjustment with that of a year of optimism and extreme activity.

"The depression is world-wide and due largely to over-stimulation of production both in staple commodities and manufactured goods during the boom years of 1928 and 1929. It is hazardous to predict the period of readjustment. The depression has been more prolonged than should have been warranted by excess production.

"Experience of many past years, recorded by statistics, predicts a still higher peak of commercial activity and prosperity following the recovery.

"Neither foreign nor domestic business can persist forever in the same trend, whether it be upwards or downwards."

GOODRICH OFFICIALS ARE TOLD OF COMING UPTREND

More than 200 officials of the B. F. Goodrich Company listened to a talk by A. D. Moss, director of purchases, at the Akron City Club on November 6. Mr. Moss predicted an early uptrend in the rubber business and also outlined some of the details of his own department, stating that Goodrich buys 11,000 different articles in the manufacture of 32,000 different products and buys from 2,000 sources and has nearly twice that many available sources.

"Inventories are proportionately lower today, both in raw materials and finished products, than ever before," he declared, "and buying for immediate consumption and manufacturing for immediate sales give the industry a sound foundation for an anticipated uptrend. An appreciable rise in the rubber business is likely by spring with a gradual increase from then on. In a little more than a year we may see a scramble to meet demands. We are operating on a buyer's market with raw materials prices equal to those of 1915, but an even lower market may come before the rise.

"The rubber industry does not run on the best merchandising scale because the possibility of loss on cotton and rubber inventories can not be offset by the selling of manufactured products. We have no protection on these important commodities, hence can not hedge to save ourselves.

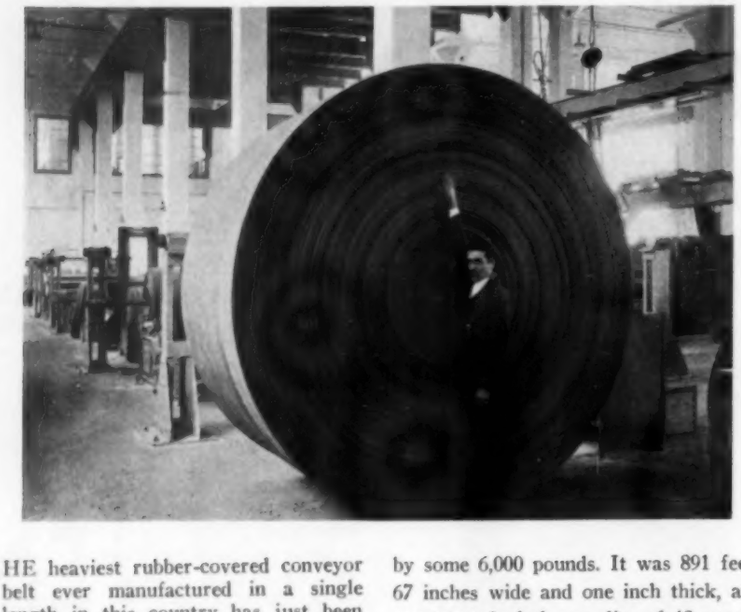
"For the first time in the history of the industry the money value of cotton was used in the rubber industry at present price levels is greater than the money value of rubber. Purchases of the industry in money are 50 per cent lower than five years ago, not due so much to the business depression as lower price levels."

Apex Rubber Bankruptcy

A second meeting of creditors of the A. J. Stephens Company and the Apex Rubber Company, Inc., both of Kansas City, Mo., was held in that city November 18 to consider various fees and transact other related business. It was announced that the balance of the assets will be paid to priority claims, and general creditors will receive nothing. The companies, which had recently been engaged in the manufacture of rubber greens for miniature golf courses, were declared in bankruptcy by the federal district court last month.

BUY NOW—Carbon black and other rubber chemicals are at a bargain.

Heaviest Single-Length Belt is Made by U. S.



THE heaviest rubber-covered conveyor belt ever manufactured in a single length in this country has just been shipped from the new belting plant of the United States Rubber Company at Passaic, N. J., to a customer of its export division. The belt weighed 28,565 pounds, exceeding the weight of any single roll previously made by some 6,000 pounds. It was 891 feet long, 67 inches wide and one inch thick, and was constructed of eleven plies of 42-ounce duck. The view above also shows one corner of the huge five-story mechanical goods factory of the United States Rubber Company, which was opened at Passaic in August.

RUBBER MEN SPEAK AT A. C. S. REGIONAL MEETING

The seventh annual regional meeting of the sections of the American Chemical Society located in Ohio and neighboring states was held at Oberlin College, Oberlin, O., on November 1. After an opening talk by Ernest Hatch Wilkins, president of Oberlin College, there were eight technical papers read during the morning and afternoon, two of them by Akron rubber chemists, and a dinner and concert to close the session.

Robert C. Williams, of the Firestone Tire & Rubber Company, presented a paper on "Cetylsulfonic Acid as a Typical Electrolyte," and E. Karrer, of the B. F. Goodrich Company, spoke on "The Nature and Measurement of Frictional Forces and Their Relation to Chemical Structure." There was a large attendance present from among the members of the Akron Section of the American Chemical Society and the Akron Group of the Rubber Division, A. C. S.

CATALPO
for
Footwear

CARRIER ENGINEERING ABSORBS TWO COMPANIES

The Carrier Engineering Corporation, Newark, N. J., widely known in the rubber and allied industries through its air conditioning and drying installations, will merge with the Brunswick-Kroeschell Company, makers of refrigeration systems, and the York Heating & Ventilating Corporation, it has just been announced. Including subsidiary and affiliated companies, the merger will unite fifteen concerns, five of them foreign, with total assets of approximately $15,000,000. All of the companies involved will retain their separate entities under a holding company to be known as the Carrier Corporation.

The Carrier Engineering Corporation was founded in 1914 by Willis H. Carrier, J. I. Lyle and E. T. Murphy, who are now president, executive vice-president and vice-president in charge of sales, respectively. The Brunswick-Kroeschell Company has plants at New Brunswick, N. J., and Chicago, Ill., and maintains a complete line of commercial refrigerating machines for every cooling or freezing requirement. The York Heating & Ventilating Corporation is a Philadelphia concern with plant at Bridgeport, Pa., and has developed unit heaters and coolers now widely used in all kinds of industrial plants.

New Safety Council Members

Two more rubber manufacturing companies have joined the Rubber Division of the National Safety Council. These are the General Rubber Goods Corporation, Buffalo, N. Y., and the Melflex Products Company, Akron, O.

RUBBER STOCKS BOUGHT BY CONTINENTAL SHARES

Continental Shares, Inc., Cleveland holding company which has wide interests in the rubber and steel industries, reports net profit for the first nine months of this year of $15,999,714, comparing with $4,106,938 in the full year of 1929. There was, however, an unrealized depreciation of $38,202,202 in the market value of securities held as of September 30, and the market value of $88,710,091 for such securities shows a shrinkage of $29,926,180 from the total cost of $118,636,271 at which they are carried on the company's books.

Among other securities acquired are rubber company stocks to the value of $4,358,225. A total of 126,950 additional shares of Firestone Tire & Rubber Company were acquired, bringing total holding to 156,700 shares or 7 per cent of the total outstanding and 93,800 additional shares of B. F. Goodrich Company and 40,000 additional shares of United States Rubber Company were also acquired.

Form New Rubber Company

The G. & T. Rubber Products Corporation has just been incorporated for the purpose of manufacturing rubber articles of various types, with headquarters at Railroad Place, Woodbridge, N. J. The stated capital is to include $100,000 of preferred stock and 4,000 shares of common stock. The incorporators are Robert E. Tyson and Thomas H. Tyson, both of Woodbridge, and A. F. Donovan, of Elizabeth, N. J.

Goodrich Preferred Dividend

Directors of the B. F. Goodrich Company voted on November 6 to pay the regular quarterly dividend of $1.75 a share on the preferred stock of the company. The payment will be made January 2 to holders of record as of December 10.

Rubber Stocks Higher

Stocks of leading rubber companies, led by Goodyear, advanced to higher levels during the fortnight and closed as follows:

	Last Price Nov. 18	Nov. 5	1930 High	1930 Low
Aetna	—	—	8½	3½
Ajax	—	⅝	2½	½
Amer. Hard Rubber	—	—	81	50
Dayton "A"	—	—	3⅞	3¾
Falls	—	—	4¾	1
Faultless	—	—	37	32½
Firestone	20⅝	18½	33⅛	15⅝
do. 6% pfd.	68½	59⅞	87⅞	53⅝
Fisk	1⅝	1⅛	5½	1
do. 1st pfd.	4⅜	3⅞	21	2¼
General	—	100	163	100
do. pfd.	—	—	91	83½
Goodrich	22	17¾	58½	15¼
do. pfd.	—	68	104½	67⅝
Goodyear	50⅞	40	96⅞	35¼
do. 1st pfd.	83	—	102	78¼
India	—	19¾	25½	8½
Intercontinental	4	—	7½	2¼
Kelly-Springfield	2⅞	2	6⅛	1½
do. 6% pfd.	30	—	39	29
Lee	4⅛	3⅝	11	3¼
Mohawk	—	—	16⅝	5½
do. pfd.	—	—	55	15
Norwalk	¾	—	4	⅝
Pirelli	39¼	39½	50⅞	37½
Raybestos-Manhattan	24	19½	58⅞	17⅝
Seiberling	6½	5½	18½	4
do. pfd.	35	—	78	30
U. S. Rubber	15⅞	13	34	11
do. pfd.	28¾	23¼	63⅞	21

Rubber News Around the World

UNITED STATES HOLDS LEAD IN TIRE EXPORTS

According to comparative statistics compiled by the Rubber Division of the Department of Commerce, the United States continued to hold its lead in the tire export market during the first nine months of 1930. During this period, the United States exported 2,075,657 casings, as compared with shipments by Canada of 1,123,353 casings. The United Kingdom was third with exports of 1,105,701 casings, leading France which shipped a total of 876,410 casings.

The United States continued to be the leading exporter into other parts of North and Central America, with the exception of British Honduras and some of the British West Indies, where the lead was held by Canada. Canada was also the leading exporter into the important markets of Brazil, Argentina and Peru, but the United States held its lead in South America as a whole. The United Kingdom was the leading exporter to the Irish Free State, the Channel Islands, Estonia, Latvia, Lithuania, Czechoslovakia, France, Italy and Rumania. France led in exports to Switzerland, Russia and Greece and Canadian exports were the highest to Denmark, but the United States led in all other European countries and in Europe as a whole.

The United Kingdom held the lead in exports to the Near East and France continued to dominate the African market, more than 50 per cent of the shipments to that continent coming from French factories. The United States was the chief exporter to Asia and Australia, but Canada dominated the important New Zealand market.

The Canadian official statistics include motorcycle casings, which are not included in American and United Kingdom figures, and the French export statistics are estimated on the basis of the official reports which are by gross weight only.

RUBBER ROAD MAY CIRCLE ST. PAUL'S CATHEDRAL

As a result of the enormous expense incurred in strengthening St. Paul's Cathedral, London, which had become an unsafe structure largely as a result of vibration caused by the ceaseless flow of passing traffic, a movement has been set afoot to lay a rubber roadway all round the historic pile. The City of London Corporation has appointed a committee to go into the question of cost.

It is suggested that if the Cathedral were surrounded by rubber roads it would not suffer so much from vibration from traffic. Some authorities fear that the cost will be too great, but H. Eric Miller, a former chairman of the Rubber Growers' Association, says that rubber roads can now be laid down at less than one-half the cost of a few years ago, and that it would be only about $2.50 per square yard more than the cost of granite setts.

I. R. I. Transactions

Through a special arrangement with the Institution of the Rubber Industry, members of the Rubber Division of the American Chemical Society may receive the *I. R. I. Transactions* for $4 a year instead of the usual rate of $6.50. A sample copy will be sent on request to W. F. V. Cox, secretary, Faraday House, 10 Charing Cross Road, London, W. C. 2, England. A similar arrangement enables I. R. I. members to subscribe to *Rubber Chemistry and Technology* at reduced rates.

RUBBER INSTITUTION TO HOLD SEVERAL MEETINGS

Dr. A. Van Rossem will address the members of the London Section of the Institution of the Rubber Industry at the Arts Theatre Club in that city on December 1. The West of England Section will meet at Trowbridge on December 3 to hear a paper on "Rubber Works' Acountancy and Costing" by C. Solomon.

Members of the Midland Section will be addressed on December 9 by W. Bond, F. I. R. I., on "Standardization as Applied to Rims and Tires," the meeting being scheduled for the Grand Hotel at Birmingham. On December 10, the Scottish Section will assemble at Glasgow to hear a paper on "Synthetic Resins."

GOODYEAR OF CANADA SHOWS LOWER EARNINGS

The Goodyear Tire & Rubber Company of Canada, Ltd., and subsidiaries have reported for the year ended September 30 a net profit of $1,550,404 after depreciation, federal taxes and other charges. This compares with net earnings of $3,463,205 in the preceding fiscal year.

For the 1929-1930 fiscal year, these earnings are equal to $8.01 a share on the common stock, as compared to earnings of $21.94 a share in the year ended September 30, 1929. Regular annual dividends of $5 a share are paid on the common stock, but an extra dividend of $2.50 a share was paid on October 1, 1930, and an extra of $5 a share on October 1, 1929.

C. H. Carlisle, president declared in a statement accompanying the dividend checks of last month that after writing down inventories to current market value, lowest in the history of the rubber industry, the company would still be able to add to surplus account. "During the year," he stated, "the company enjoyed a larger per centage of average business and relatively increased its position. However, the rapid decline in the market price of both cotton and rubber and the material decline in unit value and prices of finished goods have made it impossible for the company to show earnings comparable with normal years."

INDIA TYRE & RUBBER HOLDS ANNUAL DINNER

The annual distributors' dinner of the India Tyre & Rubber Co. (Great Britain), Ltd., of Inchinnan, was held in London recently, the chair being occupied by W. P. Naismith, chairman of the company.

Toasting the company, Sir George May, K.B.E., said that, despite the fact that the concern had only been in existence for two years, in its first year of trading it made a profit of £130,000 ($650,000). In founding the firm, he declared the company displayed exceptional courage, as it has aimed at quality, and tire users generally now realize that this is the most profitable policy in the end.

A. M. Melville, managing director of the company, paid special tribute to John Cooper, the sales manager, for his efforts to promote the interests of the undertaking. The sales organization is so arranged that every distributor has a chance of participating in the profits of the business. Each distributor is regarded as part of the organization.

"The administration," continued Mr. Mellville, "is out to do the best for its distributors belause it knows that in doing so it is doing the best for the organization. It is also encouraging export business under one of the most expert men in the motor industry—Mr. Evans. All concerned in the undertaking have faith in the product, the company, and the sales policy. The more we encourage our export business, the more we can progress with the home industry, and give its share towards the relief of unemployment. The management has every anticipation of trebling next year the output of the present year."

British Unemployment Higher

The unemployment rate in the rubber industry of Great Britain, including unemployment due to temporary stoppages, at September 25, the date of the latest return, was 16.8 per cent, against 16.4 per cent a month previous and 7.6 per cent a year ago. There are, therefore, just under 11,000 on the unemployed list of the industry.

CATALPO
for
Inner Tubes

Names in the News

JAMES L. MOLONEY has assumed the duties of advertising manager of the Seiberling Rubber Company, following the recent resignation of FRANK R. GRIFFIN to join the Blackman Company, New York City advertising agency. Mr. Moloney has served a long apprenticeship in the advertising department of the Seiberling Rubber Company and in other Akron concerns.

I. D. PATTERSON, chief chemist at the Goodyear Tyre & Rubber Company (Great Britain), Ltd., Wolverhampton, England, is now in Akron on a business visit to the Akron offices of the Goodyear organization.

DAVID M. GOODRICH, chairman of the board of directors of the B. F. Goodrich Company, on November 13 attended the formal dedication of the new Goodrich School at Akron, which was named for his father, the founder of the company. JAMES D. TEW, Goodrich president, was also present at the ceremony and made a short address.

R. I. GRIFFITHS, vice-president of the Miller Rubber Company, spoke on the subject of the "Manufacture of Rubber and Rubber Goods" before a meeting of the Hoover Engineers' Club at North Canton, O., on November 12. He predicted that in the future shorter working hours with no reduction in wages would give the workingman more time to drive his automobile, which in turn would necessitate a larger consumption of tires and increased employment in the rubber industry.

T. F. DOYLE, of the Firestone Tire & Rubber Company comptroller's office, went to Columbus, O., on November 12 to attend the annual meeting of the Ohio Manufacturers Association.

PETER ROST, production superintendent of the Northern Engraving Company, Canton, O., spoke before the members of the advertising and related departments of the B. F. Goodrich Company at their second winter group meeting on Novebmer 11.

F. D. HARRISON, former Akronite and now manager of the Goodyear Oriental, Colombo, Ceylon, gave an illustrated talk on the Orient before the Men's Brotherhood of the First Methodist Episcopal Church at Akron on November 14. Mr. Harrison has spent three years in Ceylon and will leave next month for another three-year stay.

F. A. SEIBERLING, president of the Seiberling Rubber Company, acted as one of the committee which welcomed to Akron the members of the International Road Congress on November 3. The delegates to the Washington conference were conducted through the Akron tire factories, the city airport and the Goodyear-Zeppelin Corporation dock. The delegates were further entertained by a luncheon at the Akron City Club and a banquet at the Portage Country Club.

BAKER ASSOCIATED WITH FIRESTONE ADVERTISING

Horace R. Baker, former advertising manager of the Miller Rubber Company and also previously connected with the Goodyear Tire & Rubber Company, has been called from Chicago to the advertising department of the Firestone Tire & Rubber Company at Akron. Mr. Baker resigned from his post at the Miller Rubber Company on April 15, 1929, after having been advertising manager for seven years, in order to become vice-president of the Gardner Advertising Company of St. Louis and New York.

Previous to joining the Miller organization in 1920, Mr. Baker was a member of

H. R. BAKER

the advertising and publicity staff of the Goodyear Tire & Rubber Company. He organized the Akron Advertising Club and was its first president.

A native of Xenia, O., Mr. Baker studied at Lafayette College and Princeton University, from which he was graduated in 1912. While at college he served as director of children's work for the Evangelistic Committee of New York, and after graduation worked three years as assistant secretary of the Travelers' Aid Society of that city. He later served as assistant secretary-treasurer of the League to Enforce Peace and enlisted in the naval reserves during the war. He is a thirty-second degree Mason, Knight Templar.

In his recent association with the Gardner Advertising Company, Mr. Baker had charge of territory from Chicago to Pittsburgh and from Detroit to the south.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, and J. D. TEW, president of the B. F. Goodrich Company, represented Akron at a reception for REAR ADMIRAL RICHARD E. BYRD, held in Cleveland on his arrival in that city on November 5.

JOSEPH A. ANDREOLI has been appointed director of European sales in the export department of the General Tire & Rubber Company. Until recently export manager of the India Tire & Rubber Company, Mr. Andreoli has been connected with the export departments of Akron rubber companies for ten years and has made 28 trips to Europe.

P. L. DILDINE, manager of the factory standards department of the B. F. Goodrich Company, will preside at the first meeting of the Shop Methods Division of the American Management Association at the William Penn Hotel, Pittsburgh, Pa., on December 11 and 12. Mr. Dildine, who is vice-president in charge of the division, will also read a paper on "The Viewpoint of Shop Methods Men" at a dinner session on December 11. A. L. KRESS, manager of the industrial engineering department of the United States Rubber Company, will preside at the session on December 12, which will be devoted entirely to process development.

JOHN J. NOBLE has been elected assistant secretary and treasurer and also a director of the Vulcanized Rubber Company, Morrisville, Pa., to fill the place of the late ABRAHAM M. SAWYER. HARRY KEPPLER, formerly of the Haepner Rubber Company, Ashtabula, O., has been appointed vice-president and superintendent of the factory.

F. W. TITUS, executive vice-president of the Pacific Goodrich Rubber Company, returned to Los Angeles early this month after a series of business conferences at Akron. He declared on his return that a survey just completed by Goodrich shows that 46 per cent of the tire equipment on motor cars now operating in the United States is so badly worn that it will have to be replaced in 60 or 90 days. Mr. Titus also stated that the Pacific Coast division of the Goodrich organization has led all others in sales this year.

RALPH H. MINER, tax counsel for the Goodyear Tire & Rubber Company, spoke before 250 members of the Cleveland Bar Association on November 6 at a dinner meeting in the Hotel Allerton in that city. He declared that if real estate were not to be taxed for additional revenues he feared that the load might be shifted to industry, putting Ohio manufacturing at a disadvantage with industry in other states where the tax burden is light.

C. B. O'CONNOR, general manager of Goodrich Silvertown, Inc., and P. J. KELLY, advertising manager of the B. F. Goodrich Company, attended the annual meetings of the Association of National Advertisers in Washington, D. C., from November 10 to 12. Mr. Kelly is vice-president of the national organization and chairman of the newspaper advertisers' committee. Others from the Goodrich organization who were present included W. SEWALL, H. E. VAN PETTEN and E. C. LORENTZEN.

SAM BROERS, vice-president of the Firestone Tire & Rubber Export Company, returned to Akron on November 4 after a 4,500 mile airplane journey through Lower California to Mexico City and back by way of Los Angeles to Ohio. He traveled for ten days with CARL B. SCHMIDT, president of the Mexican Trading Corporation, Firestone tire distributors, in the latter's own commercial plane.

EDWIN J. WARD, head of the art department of the B. F. Goodrich Company, was the speaker at the first of a series of advertising conferences, held at the company offices on November 4. He spoke on "Industrial Art."

CONGRESSMAN ARTHUR FREE of California was a visitor to the factory and hangar of the Goodyear-Zeppelin Corporation on November 4. After a luncheon with CONGRESSMAN FRANCIS SEIBERLING, a director of the Goodyear Tire & Rubber Company, and P. W. LITCHFIELD, president of both corporations, he stated that he was fully in favor of the navy's program in constructing a second giant dirigible after the completion of the Akron and also of government aid to commercial dirigible lines.

GEORGE F. JOHNSON has resigned as president of the Endicott-Johnson Corporation and has been elected chairman of the board. GEORGE W. JOHNSON was elected president; CHARLES F. JOHNSON, JR., first vice-president and general manager; LAWRENCE MERLE, second vice-president; and EDWARD CHRISFIELD, third vice-president. Other officers remain the same as heretofore.

HARRY E. BLYTHE, assistant to P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, acted as host to 50 Goodyear lighter-than-air operations men on November 3 at Young's Hotel, Akron, O. He declared that excellent work had been done during the year by the group, which included blimp pilots, ground crews, mechanics and other members of the organization.

R. E. DEPEW, sales manager for the Fairchild Aviation Corporation, and C. W. MYERS, chief pilot of the Great Lakes Aircraft Company, were visitors at the Akron factory of the B. F. Goodrich Company on November 5. They viewed and discussed the work being done by Goodrich engineers on an ice protection device.

THOMAS H. THROPP, former president of the Trent Tire Company, Trenton, N. J., is now recovering from a recent nervous breakdown at his home.

A. H. BRANHAM, vice-president and general manager of the Murray Rubber Company, Trenton, N. J., has returned from a business trip through the southern states.

W. W. MARTIN, general manager of the Société Goodrich in France, and SIR WALROND SINCLAIR, manager and director of the British Goodrich Rubber Company, Ltd., in England, were visitors to the Akron offices of the B. F. Goodrich Company during the first half of this month.

New Factory Equipment

Link-Belt P. I. V. Gear

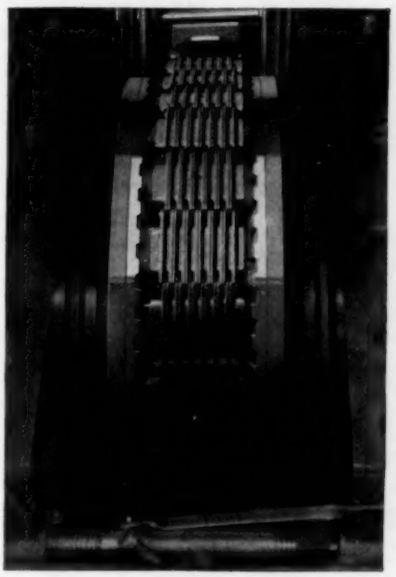
What is said to be the first all-metal variable-speed transmission on the market has recently been announced by the Link-Belt Company, Philadelphia, Pa. It is called the P. I. V. Gear, the initials standing for "Positive Infinitely Variable," indicating its characteristics.

Basically, this new speed change unit consists of two pairs of wheels of the opposed conical disc type, between which a unique chain transmits power. The effective diameters of each pair of wheels can be altered under load to change the speed ratio, without steps and without dependence upon friction. On changing speed, the self-pitching chain rises in one set of wheels and descends in the other, so that while the input shaft connected to a motor or other source of power turns at constant speed, the output shaft is brought to the desired R. P. M.

Variable-speed devices employing adjustable conical discs and belts with side friction contacts have been used for some time. The wholly original feature of the P. I. V. Gear is its use of a positive chain drive to transmit the power. Radial teeth are cut in the conical faces of the driving discs, and the self-adjustable teeth projecting beyond the sides of the chain are arranged to positively engage the radial teeth of the discs.

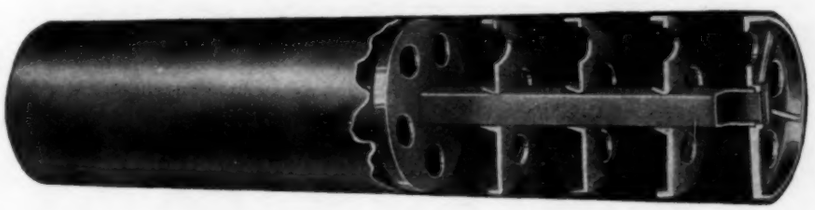
All elements of the P. I. V. Gear are built into and protected by a compact oil-tight housing, and are automatically splash lubricated. The hardened steel wheel faces are mounted on cast iron hubs backed by ball thrust bearings, and move axially on the shafts, which in turn are mounted in radial ball bearings.

The P. I. V. Gear has been put into production by the Link-Belt Company for the present in five sizes, from 1 to 10 hp. capacity, providing speed change ratios up to a maximum of six to one. It has been thoroughly tested in the past year by continuous



operation in driving machine tools, textile equipment, baking, glass and paper-making machinery. In these services it has proved dependable and efficient and has made possible desirable improvements in the design of several types of machines.

New Large Diameter Light Weight Shell



DEVELOPED to meet the engineering requirements of the rubber industry, this large diameter light weight shell is radically different from those heretofore supplied. This is due to the details of its construction in using entirely pressed steel spiders and heads, square seamless steel tubing and a heavy gauge body, interlocking by the welding process all items, which, its manufacturers claim, has brought out a shell that is double as to strength and 25 to 50 per cent less in weight.

As shown in the above illustration, a rigid, seamless, square bar of heavy gauge steel is used to resist twisting by the bar that turns the shell when it is in service. The interlocking of the inside spider to the liner as well as the body is accomplished by complete acetylene welding. It is practically impossible for any part to become loose because the body is strapped and drawn tight, and spiders and body are welded together. These inside spiders are of 14-gauge pressed steel stock, and as the diameters of the shells increase the gauge of the sheet plate or outside body is increased proportionately.

Thus everything possible is done to make these stock shells less liable to damage in the course of handling and service. Shells of this type are used also for building drums perfectly smooth and true in alignment. The manufacturer is the National Sherardizing & Machine Company, 858 Windsor street, Hartford, Conn.

Current Crude Rubber Items

Rubber Output in September

Despite anouncements of curtailments, crop yields of estates for September were higher than in September, 1929, although lower than in August of this year. The total output of 424 estates in September, as calculated by the *India-Rubber Journal*, was 16,547 long tons, comparing with 17,644 long tons in August and with 14,866 long tons in September, 1929. Eleven estates in India and Burma showed a decrease of 13.65 per cent from the previous year, but appreciable increases were shown by the remaining estates in Malaya, Java, Ceylon, Borneo and Sarawak.

Wattelez Increases Output

Wattelez & Company, at Colombes (Seine), leading French firm of reclaimers, have further increased manufacturing capacity and output. Apparently French users of reclaimed rubber have not been deterred by the low price of raw rubber from ordering substantial quantities of the reclaimed article, which they regard as a special product possessing characteristics that are not to be found in raw rubber.

Rubber Footwear Exports Drop

The United States fell behind Canada in exports of rubber footwear during the first nine months of 1930. During that period, Canada exported 6,714,669 pairs as against United States exports of 6,277,931 pairs and United Kingdom exports of 2,461,512 pairs. In the same period of 1929, the United States led with exports of 9,931,805 pairs, followed by Canada with 8,423,657 pairs and the United Kingdom with 3,082,548 pairs. The three countries combined have shipped 15,454,112 pairs in the first three quarters of this year, as against 21,438,010 pairs in the same period of 1929.

Rubber Shipments to Detroit Are Made Entirely by Water

REGULAR boatload shipments of rubber direct from the plantations in Sumatra to the docks of the United States Rubber Company in Detroit is the vision of company officials, which will be realized when the St. Lawrence waterway project is completed. This vision is based on something more real than a fanciful dream. It springs from the compelling fact that already a substantial quantity of rubber has been received in Detroit by all-water shipment from the land of its growth.

This rubber came via New York, Erie Canal, Buffalo and D. & C. steamers. It was a part of the 1,800 tons which have been received by boat during the last five months. In this period the United States Rubber Company has received a boat shipment practically every day. The majority of these shipments were collected in New York, after transfer from ocean-going freighters.

First Cargo Received in May

The first rubber ever received here by boat by the United States Rubber Company was delivered on May 20, when the Empire State, a motor boat of the Sea Board Great Lakes Corporation line, docked with 270 tons. The Empire State cleared from New York.

Every week since then a barge load, averaging about 2,000 cases, has left New York for Buffalo, where the cases are transferred to D. & C. steamers for transportation to Detroit. Because the capacity of the barge is larger than that of the D. & C. boat, the latter makes many trips during the week and delivers a shipment to the United States Rubber Company nearly every day.

Boats of the Empire State capacity are not used often, as the element of time makes it difficult to assemble a full load in New York. Shipments usually are made almost as soon as the rubber is purchased.

The Empire State is 256 feet long and has a beam of 43½ feet. Its hatches are 28 feet long, 7 feet wide, and 10½ feet deep. When loaded with 1,800 tons, the maximum allowable under the present conditions of the Erie Canal, it has a draft of nine and a half feet.

The first shipment was picked up at several docks in New York, together with a large quantity of sugar for delivery to Buffalo and Cleveland. The rubber was all stored in one compartment, each shipment being carefully separated so that it could be loaded into cars at the Detroit Terminal Building in the same manner in which it was received.

Two cranes lifted platforms, bearing the rubber, from the boat's hatches, and lowered the rubber to hand trucks on the docks. It was wheeled into freight cars and borne over the Detroit Terminal Railways to the United States Rubber Company plant on East Jefferson Avenue.

Visualize Ocean Liner Delivery

With the further development of water transportation facilities, it is easy to visualize the actual delivery at the company's immense docks, along the Detroit River, cargoes of rubber direct from ocean vessels.

The final shipment by water this year will arrive in the near future, arrangement having been made with the Detroit and Cleveland Navigation Company to run a special boat after the close of its normal navigation season.

Closing Prices on Rubber Exchange of New York, Inc.

FROM NOVEMBER 5 TO NOVEMBER 18, 1930

		Spot	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Sales
No. 1 Standard Contract of 10 Tons															
Nov.	5	8.43	8.25	8.35	8.45	8.59	8.73	8.83	8.92	9.00	9.08	9.19	9.30	9.42	38
	6	8.50	8.55	8.65	8.75	8.90	9.05	9.15	9.25	9.33	9.40	9.50	9.60	9.70	38
	7	8.43	8.28	8.35	8.55	8.65	8.75	8.83	8.90	9.01	9.12	9.24	9.36	9.50	11
	8	8.37	8.30	8.40	8.54	8.67	8.80	8.90	9.00	9.08	9.15	9.25	9.35	9.50	15
	10	8.50	8.47	8.57	8.68	8.79	8.90	9.00	9.10	9.19	9.27	9.39	9.51	9.62	16
	11	8.82	8.80	8.90	9.02	9.13	9.25	9.35	9.45	9.55	9.65	9.75	9.85	10.00	34
	12	9.25	9.10	9.20	9.34	9.47	9.60	9.66	9.72	9.84	9.95	10.05	10.15	10.25	160
	13	8.87	8.80	8.88	9.04	9.19	9.34	9.41	9.50	9.57	9.65	9.79	9.90	10.00	60
	14	9.10	9.05	9.15	9.28	9.40	9.52	9.61	9.70	9.78	9.86	9.96	10.05	10.20	47
	15	9.35	9.20	9.20	9.32	9.44	9.55	9.63	9.70	9.80	9.90	10.03	10.15	10.30	33
	17	9.43	9.45	9.45	9.64	9.72	9.80	9.91	10.02	10.10	10.20	10.33	10.45	10.60	68
	18	9.43	9.30	9.35	9.40	9.48	9.55	9.65	9.75	9.81	9.92	10.06	10.21	10.40	84
"A" Contract of 2½ Tons															
Nov.	5	——	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.20	9.30	77
	6	——	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.20	9.30	9.40	9.50	9.60	101
	7	——	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.30	9.40	133
	8	——	8.20	8.30	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.20	9.30	9.40	37
	10	——	8.40	8.50	8.60	8.70	8.80	8.90	9.00	9.10	9.20	9.30	9.40	9.50	41
	11	——	8.70	8.90	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	252
	12	——	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.10	262
	13	——	8.70	8.80	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	126
	14	——	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.10	72
	15	——	9.20	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00	10.20	10
	17	——	9.30	9.30	9.60	9.70	9.70	9.80	9.90	9.90	10.00	10.20	10.40	10.50	184
	18	——	9.20	9.20	9.30	9.30	9.40	9.50	9.70	9.70	9.80	9.90	10.10	10.30	137

Output Far Above Consumption

In its issue of October 31, *Gummi-Zeitung*, German rubber trade paper, estimates total production of crude rubber in the first nine months of 1930 at 730,699 long tons, with consumption by manufacturing countries of the world at only 520,317 long tons .This would indicate a surplus of 210,382 long tons to be added to world stocks. As of September 30, 1930, this journal figures crude rubber stocks in London and Liverpol warehouses, the United States, Europe, Para and Manaos, India, the plantations, Singapore and Penang, and afloat to the United States at 454,343 long tons.

New Exchange Members

The following new members have been admitted to trading privileges on the Rubber Exchange of New York: Herman Weinstein, of M. Rothschild & Co., and E. A. Binder, of George F. Jones & Son.

M. E. A.-N. S. P. A. SHOW VISITED BY RUBBER MEN

The first joint trade show held by the Motor and Equipment Asociation and the National Standard Parts Association in connection with the annual conventions of the two organizations at Cleveland from November 13 to 19 was attended by representatives of several rubber companies, both as exhibitors and visitors. Delegates to the shows were welcomed by a dirigible of the Goodyear Tire & Rubber Company, from which a message from R. S. Wilson, Goodyear vice-president, was dropped in a parachute.

The Baldwin Rubber Company, Pontiac, Mich., was represented by Herman H. Gabelman, manager jobbing division; S. C. Clark, president; C. B. Myers, vice-president in charge of sales; Herman Koelliker, vice-president in charge of manufacturing; and H. B. Denman, technical superintendent. The Continental Rubber Works, Erie, Pa., had in its delegation H. T. Fowler, sales manager; E. R. Graham, New York City branch manager; E. B. Harvey, Boston branch manager; W. R. Knowles, Chicago branch manager; H. J. Luckenbill and W. L. Zimmerman, factory representatives.

The Gates Rubber Company, Denver, Col., was represented by J. H. Crary, Jr., sales manager tire division; Edward J. Tesdell, general manager accessories and mechanicals; F. J. Cavender, district manager; and F. E. Matthews, field man. The Holfast Rubber Company, Atlanta, Ga., had as representatives L. P. Cox, field manager; Matthew E. Hill, general sales manager; Elmer S. Orr and C. S. Wilson, branch managers.

The Thermoid Rubber Company, Trenton, N. J., included in its delegation Robert J. Stokes, president; Robert Lee, vice-president; J. A. Wheatley, sales manager automotive division; A. H. Greywacz, assistant sales manager; Willard Kelly, Pacific coast manager; H. H. Swain, F. G. Leland, S. H. Lyons, S. K. Dennis, sales supervisors. Raybestos-Manhattan, Inc., was represented by a large delegation from its Raybestos Division at Bridgeport, Conn. Among other rubber companies and firms selling to the tire trade that were represented were the Las-Stik Manufacturing Company, Hamilton, O., and A. Schrader's Son, Inc., Brooklyn, N. Y.

JOHN S. QUIMBY, for many years purchasing agent of the Joseph Stokes Rubber Company, Trenton, N. J., has been appointed business manager of the State Teachers' College at Trenton by the New Jersey State Board of Education. Mr. Quimby was with the Joseph Stokes Rubber Company for about 25 years and was later a salesman for the Vulcanized Rubber Company, Morrisville, Pa.

Crescent Wire Banquet Held

More than 250 employes of the Crescent Insulated Wire & Cable Company attended the recent semi-annual banquet given by the firm at Hillwood Lakes, Trenton, N. J. The toastmaster was Edmund L. Robinson, factory manager of the company.

New York Factories Busier

The volume of employment in rubber and gutta percha factories in New York State increased last month, as compared with September, according to the index figures given in a statement issued by Frances Perkins, state industrial commissioner. The percentage of increase was .3 per cent in the state as a whole and .2 per cent in New York City alone. For all factories of the state there was a decrease in employment of 1.7 per cent during October.

NEW ARMY CAISSONS TO RIDE ON BALLOON TIRES

Balloon-tired and moving on ball-bearings, a new 155-millimeter artillery piece has been developed to combat the high speed tanks and other mechanized fighting units of the last few years, Major General Harry G. Bishop, chief of the Field Artillery branch, declares in his annual report, made public this month by the War Department.

Riding on shock-absorbing springs, this gun will be some 5,000 pounds lighter than its predecessors, and balistically is a material improvement over World War weapons.

Other important advances were made during the year in the field of motorization, but General Bishop reports the question of supplanting the horse with vehicles is still unsettled by the U. S. Army. The principal foreign nations, too, are deeply interested in complete motorization but also are loath to give up the tried and true animal-drawn units.

FIRESTONE PLANS LARGE DETROIT SERVICE STORE

Ground was recently broken at Detroit, Mich., for construction by the Firestone Tire & Rubber Company of a service station which will cover approximately one and one-half acres, with four floors and basement, having more than 80,000 square feet of floor space. The new service store, it is said, will be the largest of its kind in the United States and will be capable of giving an automobile every kind of service and of handling more than 100 cars simultaneously.

It is expected the new automobile service "department store" will be opened by April 15. When completed, it will bring the investment of the Firestone company in Detroit to more than $1,000,000.

Bloomingdale Offices Moved

The Bloomingdale Rubber Company, makers of reclaimed rubber, will move their executive offices on December 1 from 501 Fifth Avenue, New York City, to their factory at Chester, Pa. The company also has plants at Butler, N. J.

Dewey & Almy to Build

The Dewey & Almy Chemical Company, Cambridge, Mass., has filed plans for an addition to its plant, consisting of a one-story brick unit to cost about $45,000, including equipment. Work will be started on the structure at once.

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, NOVEMBER 18, 1930

RUBBER

Crude

THE increase in crude rubber consumption in the United States to 27,271 long tons for the month of October was not entirely expected in the trade. Previously, a bulletin from the Rubber Exchange reported that the members of the trade had estimated October absorption at only 22,000 long tons. In consequence of this upturn in factory operations, authorities are figuring on a domestic consumption of about 48,000 long tons during November and December, which would bring the total for the year up to 374,000 long tons as compared with about 466,500 long tons in 1929.

The course of the crude rubber market has been sharply upward during the fortnight, following the announcement of the increased consumption and the lowered stocks and production in the Far East. Rubber closed on November 17 at 9½ cents a pound as compared with 7½ cents at the opening of the month. Among other reports that persisted during the period was that native planters on the west coast of Sumatra were felling rubber trees and preparing to grow rice instead.

Prices quoted on the New York outside market at the close on November 18 were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Nov.	.09⅝	@	.09½
Dec.	.09⅝	@	.09½
Jan.-Mar.	.09½	@	.09¾
First Latex, crepe spot	.09⅝	@	.09½
Amber Crepe, No. 2	.08⅝	@	.08⅞
Amber Crepe, No. 3	.08½	@	.08¾
Amber Crepe, No. 4	.08	@	.08¼
Brown Crepe, Clean thin	.08½	@	.08¾
Brown Crepe, specky	.08¼	@	.08⅝
Liquid Latex, per gal.	.75	@	.85

Paras—

Up-river Fine	.12	@	.12½
Up-river Medium	Nominal		
Up-river Coarse	.07	@	.07½
Acre Bolivian, fine	.12	@	.12½
Caucho Ball, Upper	.07	@	.07½
Islands, fine	Nominal		

Centrals—

Central, scrap	—	@	.07
Esmeraldas	—	@	.07

Balata—

Block, Colombia	Nominal		
Block, Ciudad	.34	@	.35

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot-Nov.	4½	@	4⅝d
Dec.	4½	@	4⅝d
Jan.-Mar.	4⅝	@	4¾d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot		@	4¼d

Scrap

The position of the scrap rubber market has improved slightly with the advance in the price of crude since the opening of the month, but dealers are still operating under difficult conditions. The turn of the year is expected to bring the increase in business for which the trade has long been waiting. Late prices follow:

(Prices to Consumer)

Auto tire peelings	ton	23.50	@25.00
Mixed auto	ton	12.00	@12.50
Bicycle tires	ton	9.00	@10.00
Clean solid truck tires	ton	24.50	@26.00
Boots and shoes	cwt.	1.10	@ 1.25
Arctics, untrimmed	cwt.	.90	@ 1.00
Inner tubes, No. 1	lb.	.05¼	@ .05½
Inner tubes, No. 2, compounded	lb.	.02½	@ .02¼
Inner Tubes, Red	lb.	.02¼	@ .02⅜
Air Brake Hose	ton	10.00	@12.00
Rubber Hose	ton	9.00	@10.00

Reclaimed

Consumption of reclaimed rubber during the month of October was higher at 10,724 long tons, but due to the sharp advance in the consumption of the crude commodity the ratio of reclaim to crude used was lower. Stocks of reclaimed rubber show a slight decline at 21,145 long tons as of October 31. Late prices for the various grades follow:

High Tensile

Super-Reclaim Black	lb.	.08½	@	.08¾
High Tensile Red	lb.	.08¼	@	.08½

Shoe

Unwashed	lb.	.06	@	.60¼
Washed	lb.	.08	@	.08¼

Tube

No. 1 (Floating)	lb.	.08½	@	.08¾
No. 2 (Compounded)	lb.	.07½	@	.07¾

Tires

Black	lb.	.05¾	@	.06
Black, selected tires	lb.	.06	@	.06½
Dark Gray	lb.	.07	@	.07½
Light Gray	lb.	.07¾	@	.08
White	lb.	.08¾	@	.09
Truck, Heavy Gravity	lb.	.06	@	.06¼
Truck, Light Gravity	lb.	.06¼	@	.06½

Miscellaneous

Mechanical blends	lb.	.05	@	.05½

COTTON and FABRICS

Cotton

BASED on calculations made as of November 1, the Department of Agriculture has estimated the yield for the current year at 14,438,000 bales. This represents a slight decrease from the government's report of a month previous of 14,486,000 bales, while private estimates had tended to lead the trade to expect an increase.

The Association of Cotton Textile Merchants of New York showed that domestic manufacturers maintained practically the same amount of curtailment last month as in September, and that sales and shipments of goods amounted to 146.7 per cent and 118.1 per cent of production, respectively, with the result that for the first time in a year unfilled orders at the end of the month were as large as the stocks on hand.

The high, low and closing prices on the New York Cotton Exchange on November 18 were as follows:

	High	Low	Close Nov. 18	Close Nov. 5
Dec.	10.98	10.83	10.84	10.89
Jan.	11.15	10.97	11.00	11.07
Mar.	11.45	11.27	11.30	11.30

Tire Fabrics

During the month of September the tire industry consumed 13,645,655 pounds of cotton fabrics in the manufacture of all types of casings, tubes and solid and cushion tires. Late prices for the various grades of tire fabrics were as follows:

CORD

Peeler, carded, 23/5/3	lb.	.36	@	.36¼
Peeler, carded, 23/4/3	lb.	.38	@	.38¼
Peeler, carded, 13/3/3	lb.	.33½	@	.33¾
Peeler, carded, 15/3/3	lb.	.34	@	.34¼
Egyptian, carded, 23/5/3	lb.	.45	@	.45½
Egyptian, combed, 23/5/3	lb.	.51	@	.51½

CHAFERS

Carded, American, 8 oz.	lb.	.29	@	.29½
Carded, American, 10 oz.	lb.	.28½	@	.29
Carded, American, 12 oz.	lb.	.27½	@	.28½
Carded, American, 14 oz.	lb.	.26	@	.27

LENO BREAKER

Carded, American, 8¼ oz.	lb.	.28	@	.33
Carded, American, 10¼ oz.	lb.	.28	@	.33

SQUARE WOVEN

Carded, American, 17¼ oz. 23-11 ply	lb.	.36	@	.36½
Carded, American, 17¼ oz. 10-ply	lb.	.26	@	.26½

Sheetings

The price structure of the sheetings market remained unchanged during the fortnight, with no marked activity in the trade. Latest prices, as reported by the Textile Brokers Association, follow:

40-inch, 2.50-yard	yd.	.08⅝	@	.08¾
40-inch, 2.85-yard	yd.	.07⅞	@	.07¾
40-inch, 3.15-yard	yd.	—	@	.08½
40-inch, 3.60-yard	yd.	—	@	.07⅞
40-inch, 3.75-yard	yd.	.06¼	@	.06⅜
40-inch, 4.25-yard	yd.	.05⅝	@	.05¾

Ducks

No increase in activity in the cotton duck market has been noted, and the prices quoted for the various grades have remained without change. These quotations follow:

Belting and Hose	lb.	.25	@	.26
Enameling	lb.	.28	@	.31
Single filling	lb.	.11½	@	.12½
Double filling	lb.	.13	@	.14

CHEMICALS

MANY rubber manufacturers are taking advantage of the current decline in price schedules for carbon black and certain other rubber chemicals and compounding materials by increasing their stocks or making contracts for next year's supplies. Actual consumption of rubber chemicals has been low thus far this fall, but orders for winter and spring requirements are helping to keep the suppliers of these materials busy. Predictions of a tire shortage are still being made, and one manufacturer has figured that 46 per cent of the tire equipment now in use will have to be replaced in the next two or three months.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16
Captax	lb		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Dipsol	lb.	4.30 @	4.50
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	--
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermio F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.25½@	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b.Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox B, f.o.b. St. Louis,	lb.	.07¼@	.07¾
Titanox C, f.o.b. St. Louis,	lb.	.07¾@	.08¼
Zinc Oxide—American Process			
American Azo: ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Horsehead Brand: Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅝@	.10⅞
blue label	lb.	.09⅝@	.09⅞
red label	lb.	.08 @	.08½
Zinc Oxide—French Process			
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅝@	.10⅞
Red seal	lb.	.09⅝@	.09⅞
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.07½@	.07¾
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerfloted"	lb.	.04½@	.09½
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.04 @	.08½
Carbon, uncompressed	lb.	.04 @	.08½
Disperso, f.o.b. Louisiana	lb.	.041 @	—
Disperso, f.o.b. Texas	lb.	.04 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.04 @	.07½
Excello, compressed	lb.	.05 @	.09
Gastex, f.o.b. Texas	lb.	.03½@	.05
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.04½@	.09½
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.04½@	.09½
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.62 @	3.92
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.23 @	.24½

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50 @	65.00
Parmr, solid	ton	28.00 @	48.00
Pioneer, MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	.33½@	.35
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.08 @	.09¾
Cottonseed, crude		.06½@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	— @	.07
Niger	lb.	.05¼@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.15 @	.20
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.50 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	5.65
Pigmentar	gal.	.16 @	.21
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.11 @	.12
Alcohol, denatured, No. 1 bbls.	gal.	.40 @	.44
Benzol, 90%	gal.	.21 @	.23
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.35 @	.40
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.41 @	.42
wood	gal.	.38 @	.39
destructively distilled	gal.	.34 @	.35
Waxes			
Beeswax, white	lb.	.51 @	.53
Carnauba	lb.	.30 @	.34
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02½@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03⅝@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

Agerite, Resin	lb.		
Powder	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Vandex	lb.		

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

REDUCTIONS of stocks of crude rubber at Singapore and Penang and on the eastern plantations have been insignificant in comparison to the tremendous increase in the amount of the commodity held in the United States. By October 31, stocks in this country had risen to the record figure of 184,701 long tons, or nearly 100,000 long tons more than a year ago. The decline in stocks afloat, in Malayan production and in estate inventories, however, have led the trade to believe that the peak in world stocks has been passed and that voluntary restriction of output is really making some headway.

British warehouse stocks have again turned upward and on November 15 totaled 116,045 long tons as compared to 114,495 long tons on November 8. Liverpool warehouse stocks have attained a record high level of 40,003 long tons.

Domestic tire inventories dropped to extremely low levels as of September 30 and, while manufacturers made some effort to replenish their stocks during October, it is believed that a sharp increase in production will be necessary at the turn of the year. The New York *Journal of Commerce* estimates that on September 30 there was a 2.2 months' supply of both of casings and inner tubes in manufacturers' hands; a 2.4 months' supply of balloon casings; a 2.5 months' supply of balloon inner tubes; a 1.7 months' supply of high pressure casings; and a 1.6 months' supply of high pressure inner tubes.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,386	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,125	1,027,136	14.67	36,868
July	35,182	10,553,944	13.39	2,732	736,863	12.04	32,450
Aug.	35,713	9,666,362	12.08	2,194	646,667	13.16	33,519
Sept.	35,230	8,460,812	10.68	1,509	429,789	12.72	33,871
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1923	1924	1925	1926	1927	1928	1929	1930
Jan.	30,106	29,058	29,638	32,196	31,518	34,403	43,002	36,669
Feb.	30,149	25,736	29,761	31,136	30,137	33,702	41,594	32,726
Mar.	36,629	28,385	33,498	32,986	36,141	35,688	44,780	35,914
Apr.	29,085	27,129	34,139	32,696	35,871	32,772	47,521	40,207
May	36,155	25,845	35,322	29,364	34,592	37,233	49,233	39,902
June	24,272	22,753	35,822	28,598	33,801	37,676	43,227	34,463
July	17,685	23,396	36,053	27,577	29,219	37,407	41,526	29,245
Aug.	20,359	28,982	35,909	34,533	33,460	42,927	38,274	30,575
Sept.	17,594	31,497	31,691	32,904	27,214	39,882	34,707	25,288
Oct.	21,321	31,520	29,047	29,836	26,790	40,857	34,800	27,271
Nov.	20,437	27,289	28,853	28,080	26,792	37,461	27,659	
Dec.	31,902	27,199	28,748	26,293	25,492	31,232	23,531	
Totals	305,694	328,769	388,481	366,149	371,027	441,340	469,804	

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,610
Apr./June	89,493	75,674	104,099	87,109	103,242	108,500	139,292	112,092
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1929	1930	MONTHS	1929	1930
January	22,602,000	25,731,000	July	36,860,000	38,256,000
February	22,776,000	26,509,000	August	37,759,000	37,433,000
March	28,495,000	31,029,000	September	34,193,000	37,823,000
April	32,019,000	34,549,000	October	32,816,000	
May	34,117,000	36,497,000	November	31,502,000	
June	33,163,000	35,902,000	December	26,550,000	

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—New York Market, in Cents per Pound

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Av.
1928																																
June	19¾		18⅝		19¼		19¼		19⅜		19½		19½		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝			19½
July	19½		19¼		19		19		19		19¼		19⅜		19⅜		19⅜		19⅜		19⅜		19⅜		19⅜		19⅜		19			19¼
August																																
September	18¾		18½		18½		18¾		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝			18⅝
October	18¾		18½		18¾		18¾		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝		18⅝			18⅝
November	17¾				17¾		18		18		18		18		18		18		18		18		18		18		18		18			18
December																																
1929																																
January	22¾		22		22		22		22		22		22		22		22		22		22		22		22		22		22			22
February	26		26		26		26		26		26		26		26		26		26		26		26		26		26		26			26
March	23		22¼		22½		22½		22½		22½		22½		22½		22½		22½		22½		22½		22½		22½		22½			22½
April	19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝		19⅝			19⅝
May	21¼		21⅛		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼		21¼			21¼
June	20¾		21		21		21		21		21		21		21		21		21		21		21		21		21		21			21
July	21		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼		20¼			20¼
Aug.	19½		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼		19¼			19¼
Sept.	17½		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼		17¼			17¼
Oct.	16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼		16¼			16¼
Nov.																																
Dec.																																
1 30																																
January	15¼																															
February	15⅝																															
March	15½		15½		15½		15½		15½		15½		15½		15½		15½		15½		15½		15½		15½		15½		15½			15½
April	14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝		14⅝			14⅝
May	13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾		13¾			13¾
June	12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼		12¼			12¼
July	10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾		10¾			10¾
August	9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾		9¾			9¾
September	8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾			8¾
October	7½		7½		7½		7½		7½		7½		7½		7½		7½		7½		7½		7½		7½		7½		7½			7½
November	8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾		8¾			8¾

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.16
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55	15.34
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.93
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	11.24
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	9.96
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	8.28
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	8.20
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	—
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Aug.	Sept.	Oct.	Nov.
1	5⅛	—	3⅝	4⅜
2	5⅛	4¾	3¾	—
3	—	4⅝	—	4⅛
4	5¼	4½	4	4⅛
5	5	4⅛	—	4⅛
6	5	—	3⅞	4¼
7	5	4	3⅞	4⅛
8	5	4⅛	4	—
9	5	4	4	—
10	—	4⅛	3⅞	4¼
11	4⅞	4⅛	3⅞	4⅜
12	4¾	4	—	4⅜
13	4¾	—	3⅞	4⅜
14	4⅞	4	3⅞	4½
15	5	4	3⅞	—
16	4⅞	4⅛	3⅞	—

Day	Aug.	Sept.	Oct.	Nov.
17	—	4⅛	3⅞	4⅜
18	4¾	4	3⅞	—
19	4¾	—	—	4
20	4¾	—	—	4⅛
21	4⅞	3⅞	—	4
22	4¾	3⅞	—	4⅛
23	4¾	3⅞	—	4¼
24	—	3⅞	—	4⅜
25	4¾	3⅞	—	—
26	4¾	3⅞	—	4¼
27	4¾	3⅞	—	4¼
28	4¾	—	—	4⅜
29	4¾	3¾	—	4⅜
30	—	—	—	4⅜
31	—	—	—	—

Average Monthly Price Per Pound

Month	1928 Pence	1929 Pence	1930 Pence
Jan.	19.310	9.942	7.471
Feb.	15.713	11.875	7.948
Mar.	12.736	12.135	7.595
Apr.	8.864	10.490	7.391
May	8.845	10.717	6.926
June	9.293	10.580	6.195
July	9.312	11.065	5.648

Month	1928 Pence	1929 Pence	1930 Pence
Aug.	9.300	10.505	4.880
Sept.	8.530	10.160	4.075
Oct.	8.807	9.620	4.023
Nov.	8.596	8.442	—
Dec.	8.570	7.958	—
Average for Year	10.656	10.291	—

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Oct.	Nov.
1	10.50	11.51
2	10.55	—
3	10.50	11.20
4	10.35	—
5	—	10.95
6	10.25	10.85
7	10.25	10.95
8	10.20	11.15
9	10.15	—
10	10.30	10.80

Day of Month	Oct.	Nov.
11	—	11.00
12	—	11.25
13	—	11.00
14	10.45	11.15
15	10.40	11.10
16	10.20	—
17	10.20	11.10
18	10.25	11.00
19	—	—
20	10.45	—

Day of Month	Oct.	Nov.
21	10.50	—
22	10.50	—
23	10.80	—
24	11.00	—
25	11.15	—
26	—	—
27	11.25	—
28	11.65	—
29	11.45	—
30	11.25	—
31	11.20	—

Average Monthly Price Per Pound

Month	1928 Cents	1929 Cents	1930 Cents
Jan.	19.12	20.22	17.21
Feb.	18.40	20.21	15.62
Mar.	19.38	20.19	15.13
Apr.	20.63	20.29	16.39
May	21.58	19.41	16.43
June	21.50	18.74	14.48
July	21.36	18.62	13.10

Month	1928 Cents	1929 Cents	1930 Cents
Aug.	19.28	18.62	12.03
Sept.	18.67	18.83	10.85
Oct.	19.62	18.46	10.63
Nov.	19.84	17.53	—
Dec.	20.22	17.28	—
Average for Year	19.97	19.03	—

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1928	ON HAND 1929	ON HAND 1930	AFLOAT 1928	AFLOAT 1929	AFLOAT 1930	ON HAND AND AFLOAT 1928	ON HAND AND AFLOAT 1929	ON HAND AND AFLOAT 1930
Jan.	110,244	76,342	126,068	46,441	93,330	65,483	156,685	169,672	191,551
Feb.	108,955	90,058	134,790	48,044	75,790	71,015	156,999	165,848	205,805
Mar.	114,061	100,536	141,843	43,378	67,065	63,646	157,439	167,601	205,489
Apr.	113,083	107,659	148,272	32,783	65,798	63,261	145,866	173,457	211,533
May	105,356	97,192	146,179	33,145	65,793	68,168	138,501	162,985	214,347
June	90,198	92,061	151,485	38,392	54,668	58,657	128,590	146,729	210,142
July	83,242	92,535	152,001	42,943	46,145	58,826	126,185	138,680	210,827
Aug.	68,994	90,769	158,178	54,904	49,423	61,168	123,898	140,192	219,346
Sept.	68,851	84,362	169,607	52,692	58,758	60,923	121,543	143,120	230,530
Oct.	66,421	88,463	184,701	45,646	59,180	51,122	112,067	147,663	235,823
Nov.	61,956	92,219		75,502	62,358		137,458	154,577	
Dec.	66,166	118,609		92,037	62,888		158,203	180,997	

(Rubber Manufacturers' Association figures raised to 100%.)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1928	1929	1930	At end of	1928	1929	1930
Jan.	66,524	25,191	60,434	July	35,429	30,080	81,048
Feb.	62,964	25,554	64,557	Aug.	32,084	35,605	
Mar.	58,272	28,214	68,923	Sept.	31,440	42,188	
Apr.	53,425	31,368	74,676	Oct.	24,207	47,803	
May	44,628	31,290	77,312	Nov.	17,775	52,454	
June	38,756	31,025	80,260	Dec.	19,815	54,304	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1930					
June	77,616	78,104	78,888	79,699	
July	80,060	80,501	80,814	80,845	
August	80,379	80,044	80,224	80,618	80,611
September	81,830	82,233	82,648	83,136	
October	81,544	82,245	83,102	82,218	
November	77,480	75,159	76,042		

Stocks in Liverpool

1930				
June	25,320	26,646	27,354	27,493
July	28,143	28,226	28,126	28,381
August	28,404	28,660	29,048	29,673
September	31,159	31,796	34,085	34,858
October	36,378	37,244	37,211	38,345
November	38,941	39,336	40,003	

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1928	1929	1930	End of	1928	1929	1930
Jan.	25,868	29,617	39,727	July	18,663	38,859	45,459
Feb.	22,867	32,373	44,371	Aug.	18,971	30,834	48,132
Mar.	20,538	29,437	45,657	Sept.	14,898	32,138	44,015
Apr.	16,946	26,474	48,473	Oct.	12,149	33,770	39,930
May	17,437	30,764	44,715	Nov.	29,188	30,963	—
June	18,207	30,403	42,451	Dec.	32,895	35,548	—

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	44,740	28,440	2,134	5,400	3,668
Feb.	41,955	28,180	2,159	5,000	4,370
Mar.	39,206	27,510	2,220	4,759	4,578
Apr.	39,758	23,580	2,204	4,000	4,482
May	26,482	22,730	2,308	4,000	4,388
June	36,578	20,920	2,316	3,856	4,588
July	38,311	27,290	2,312	4,500	4,665
Aug.	39,482	30,310	2,196	5,200	4,489
Sept.	39,520	32,600		5,334	4,854
Oct.					5,156

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1926	24,199,524	78.8
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1930			1930		
January	1,601,326	84.0	July	1,449,161	80.7
February	1,653,421	78.9	August	1,504,187	78.1
March	2,061,999	79.1	September	1,052,109	80.2
April	2,339,834	81.1	October	863,579	78.3
May	2,010,067	84.3	November		
June	1,338,226	82.5	December		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944	73,308
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296	74,021
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624	12,627

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,358	6,722	4,745	5,394	6,626	4,701	9,949	13,712	12,719
Feb.	6,363	6,912	4,859	5,031	5,282	4,474	11,721	15,495	13,238
Mar.	6,819	7,519	5,188	5,731	6,708	5,032	12,389	16,351	13,469
Apr.	6,178	7,884	6,024	5,812	7,294	5,429	12,717	16,929	13,948
May	6,759	8,145	6,099	6,457	7,184	5,564	13,024	17,849	14,327
June	6,692	7,304	5,464	7,117	7,254	5,647	12,162	17,957	14,163
July	6,498	6,475	4,257	7,895	7,855	5,810	11,157	15,830	12,599
Aug.	7,469	5,806	4,166	8,403	7,845	5,175	10,034	14,226	10,848
Sept.	6,802	4,758	3,365	7,145	5,998	4,405	9,705	12,875	9,812
Oct.	7,326	4,919	—	5,717	4,960	—	11,520	12,845	—
Nov.	6,075	3,603	—	4,998	3,558	—	12,579	12,935	—
Dec.	5,605	3,261	—	4,591	3,346	—	13,624	12,627	—

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180	79,417
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127	75,298
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117	13,660

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,441	6,517	4,914	6,072	7,242	5,181	12,982	15,386	13,551
Feb.	6,895	6,769	4,943	5,431	5,278	4,627	14,650	16,999	13,905
Mar.	6,231	7,466	5,271	5,731	6,737	5,042	15,573	17,750	14,057
Apr.	6,661	7,634	5,877	5,702	7,164	5,172	16,638	18,134	14,704
May	7,168	7,660	5,904	6,300	7,038	5,412	17,702	18,928	14,776
June	6,953	6,978	5,280	7,136	6,950	5,616	17,159	17,741	14,518
July	6,674	6,178	4,201	8,729	8,113	6,246	14,974	16,332	12,434
Aug.	8,343	5,846	5,116	9,350	8,183	6,146	13,931	14,157	11,452
Sept.	7,103	5,536	3,817	7,154	6,250	4,541	13,543	13,424	10,065
Oct.	6,929	5,310	—	5,662	5,001	—	15,285	13,656	—
Nov.	5,592	3,780	—	5,002	3,712	—	15,743	13,701	—
Dec.	5,184	3,716	—	4,858	3,631	—	16,117	13,660	—

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	25,584	5,703	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	346,940	297,483	49,457	15,548	13,021	2,527	362,488
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June	335,475	289,704	45,771	15,090	12,194	2,896	350,565
July	262,363	222,700	39,663	10,188	8,556	1,632	272,551
Aug.	223,046	187,288	35,758	9,792	6,946	2,846	232,838
Sept.	222,931	180,956	41,975	7,957	5,623	2,334	230,888
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1928:															
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	518	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,437	1,059	1,922	733	67,233
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	431	4,644	7,298	10,782	1,032	1,563	499	69,619
Sept.	53,484	12,892	41,092	7,993	384	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,937	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,683	900	930	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	600*	386	5,709	7,831	8,920	856	1,837	585	77,578*
Feb.	48,947	12,960	35,987	7,825	1,245	847	600*	469	6,900	7,191	11,414	944	1,797	480	75,699*
Mar.	47,320	13,236	34,084	6,269	1,129	976	600*	391	5,796	6,612	11,070	643	1,674	536	69,780*
Apr.	45,517	16,331	29,186	5,030	856	1,026	600*	366	4,802	6,326	12,582	433	1,201	630	63,038*
May	49,388	36,135	13,253	5,947	975	917	600*	350	6,352	6,661	11,916	753	1,383	555	49,662*
June	36,657	12,120	24,537	4,152	778	1,040	500*	392	4,728	4,776	9,512	425	974	551	52,365
July	41,347	12,759	28,588	4,619	792	1,087	500*	327	6,022	5,891	9,770	648	810	418	59,472
Aug.	47,982	10,304	37,678	6,779	600	740	500*	335	5,982	7,197	9,520	394	809		
Sept.	48,529	8,087	40,442	7,920	343	680	400*	234	5,960	6,358	7,302	527	1,093		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,437 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,399
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,012
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,808
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,015
1928:															
July	28,362	—1,374	3,518	3,887	2,692	2,026	1,598	724	591	895	395*	294	175	384	43,837
Aug.	28,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,887	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	200	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,270
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,520	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,478
May	48,475	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,359
June	38,821	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	520	65,882
July	41,114	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	253	519	30	465	68,401
Aug.	35,397	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	70,055
Sept.	32,912	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	253	361	91	477	68,453
Oct.	36,040	16,111	4,489	3,355	1,821	3,902	1,838	1,073	1,125	1,147	278	710	91	201	72,181
Nov.	41,097	13,141	3,082	3,776	2,709	3,221	1,275	1,226	1,453	361	253	595	62	313	72,564
Dec.	40,588	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,709
1930:															
Jan.	44,911	11,106	4,207	3,862	2,842	2,805	910	826	332	612	209	552	200*	577	73,949
Feb.	40,792	10,293	4,482	3,697	2,250	1,386	1,385	2,705	457	1,143	188	315	200*	239	69,533
Mar.	42,216	12,346	4,354	4,289	3,776	2,663	1,083	168	975	678	358	322	200*	263	73,691
Apr.	43,036	13,058	5,006	4,488	2,303	2,769	2,067	949	673	1,431	158	461	200*	255	76,810
May	40,012	9,861	5,233	4,379	2,593	2,699	1,279	1,677	64	1,250	230	274	200*	346	70,599
June	37,374	9,645	4,458	3,794	2,579	2,677	1,378	1,454	67	691	343	507	200*	282	65,500
July	32,785	7,650	3,311	3,449	3,347	1,206	587		84	939	172	756	200*	342	
Aug.	34,513	8,369	3,953	3,515	2,108	2,170	886		265	888	37	747	200*	450	
Sept.	34,373	16,015		4,089	1,578		1,279				221				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1929:				
October	6,116,000	22,386,000	3,502,000	5,887,000
November	4,395,000	17,863,000	3,400,000	4,932,000
December	2,291,000	14,781,000	3,003,000	4,751,000
1930:				
January	3,281,000	15,470,000	3,496,000	5,169,000
February	3,441,000	14,172,000	2,338,000	5,376,000
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000	17,762,000	2,593,000	5,989,000
May	3,597,000	15,603,000	1,939,000	6,163,000
June	3,379,000	15,795,000	2,734,000	5,318,000
July	2,940,000	15,117,000	2,663,000	4,910,000
August	3,458,000			4,552,000

(1) Not available; (2) Last 9 months only.

Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	——	——
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	——	——
1921	58	26,945	814	1,077,859	1,745	351,893	——	——
1922	127	57,040	812	978,765	2,335	403,812	——	——
1923	1,155	542,227	700	898,524	4,565	853,308	——	——
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1929:								
Sept.	107	51,156	38	30,327	913	279,225	343	166,135
Oct.	200	79,968	58	43,756	636	181,421	291	146,937
Nov.	125	47,796	13	11,600	583	182,677	394	185,670
Dec.	100	41,328	25	19,955	550	156,939	281	132,265
1930:								
Jan.	150	55,272	28	28,549	509	141,384	407	194,703
Feb.	75	25,956	52	45,319	367	93,087	311	153,848
Mar.	148	50,007	16	12,498	522	128,844	279	107,847
Apr.	75	19,856	58	54,548	410	103,089	226	98,239
May	172	57,760	17	13,645	602	144,415	749	242,385
June	168	51,561	52	47,000	532	120,424	389	129,368
July	93	26,000	24	17,463	45	102,325	242	78,688
Aug.	50	14,000	11	5,600	766	168,511	944	253,127
Sept.	100	28,000	45	39,512	486	86,664	402	127,751

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

	Consumption					Consumption			
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,334	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,843	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,867	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,435	47.3	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0	17,980	Dec.	13,429	11,531	49.0	27,464
1930:									
Jan.	15,010	17,454	47.6	24,241	July	12,322	12,384	42.3	23,873
Feb.	15,846	14,559	44.5	24,243	Aug.	12,047	10,985	35.9	22,980
Mar.	17,400	15,241	42.2	24,415	Sept.	11,433	10,480	41.4	21,996
Apr.	17,828	16,904	42.0	24,587	Oct.	12,349	10,724	39.3	21,145
May	17,812	17,052	42.7	23,356	Nov.	.....	.....	.....	.....
June	15,714	14,063	40.8	24,449	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.

REVIEW DESK

Books, New Publications, Catalogues, Etc.

RUBBER MILL MACHINERY SAFETY DEVICES AND TESTING APPARATUS. Published by William R. Thropp & Sons Company, Trenton, N. J. 1930. 44 pp. For free distribution.

Safety in rubber factory equipment has always been a goal of those who manufacture and those who buy such machinery. The use of such devices as overhead levers with bars and safety switch hand reset mechanically held brakes, hand reset electrically held brakes and electrical clutch brakes for slow speeds and high horse powers has become common in the industry, and these are all described and illustrated in this booklet. These safety devices and gear guards for in-running rolls are especially adapted for mills, calenders, crackers, washers, and refiners. The booklet also describes in detail testing apparatus consisting of electrically and mechanically operated pencils.

A. S. T. M. SPECIFICATIONS AND METHODS OF TEST FOR TEXTILE MATERIALS. Published by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia, Pa. 1930. 122 pp. $0.80.

Prepared by Committee D-13 on Textile Materials, this pamphlet embodies specifications covering a wide range of textile materials. It contains tolerances and test methods for cotton yarn and sewing threads, light and medium weight cotton fabrics, tire fabrics and tire cord, electrical silk and cotton tapes, asbestos yarn and tape, rayon, knit goods; tolerances for numbered cotton duck, hose and belt ducks, tire cord; methods of testing woven fabrics; specifications for testing machines, chafer tire fabrics, cement sacks, sugar bags; and definitions of terms relating to textile materials.

BROWN ELECTRIC CO_2 METER. Published by the Brown Instrument Company, Wayne and Roberts Avenues, Philadelphia, Pa. 1930. 12 pp. For free distribution.

Handsomely illustrated, this circular describes the advantages of the Brown Electric CO_2 Meter. This instrument checks the percentage of carbon dioxide in flue gas, the gas after being cleaned and dried entering a "comparison cell" where the carbon dioxide content causes an electrically heated coil to get hotter, increasing its electrical resistance, which in turn affects a galvanometer in the connected instrument, causing the latter to indicate or record the actual percentage of carbon dioxide present.

IXL TITAN HERRINGBONE OR HELICAL SPEED REDUCERS. Published by Foote Brothers Gear & Machine Company, 111 North Canal Street, Chicago, Ill. 1930. 46 pp. For free distribution.

Complete information is furnished in this catalog on this company's recently introduced line of herringbone and helical speed reducers. Both of these units are equipped with anti-friction bearings and have heat treated and hardened gears. A new rating method is used for showing horsepowers, inch pounds torque, slow speed and high speed R. P. M.'s.

BRAZILIAN MARKET FOR BELTING. By Rudolf E. Cahn. Published by the United States Department of Commerce, Washington, D. C. 1930. $0.10.

Brazil offers a permanent and steadily increasing market for rubber and other types of belting. Belting is used in this country not only in industries but to a large extent on the farms, and the extent of the Brazilian market is indicated by the figures for agricultural and industrial production which in 1927 amounted respectively to $900,000,000 and $850,000,000. This survey outlines the demand of the various industries of the country for belting, shows the source of supply of the country's imports and cites competitive prices for various types.

GENERAL CATALOG. Published by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. 1930. 1352 pp. For free distribution.

This catalog is as usual complete in its listing of all types of electrical apparatus and this year appears with an "instant index" printed on a heavy blue stock in the center of the volume.

OUR WORLD TRADE. January-June, 1930. Published by the Foreign Commerce Department, Chamber of Commerce of the United States, Washington, D. C. 1930. 20 pp. For free distribution.

Actual figures of our imports and exports during the first half of the current year are tabulated and analyzed in this pamphlet.